Math 098 Worksheet8.2A_FindingTheInverseRelation_v02
NO BOOK/ NO NOTES/YES CALCUATOR
Fall 2017 Dressler

Name_____

Solve the problem.

1) Some values for a relation are given in the table. Is the relation a function?

x	y
1	2
2	5
3	8
3	11
4	14

2) Some values for a relation are given in the table. Is the relation a function?

x	y
5	3
6	4
7	6
8	6
9	15

3) Some values for a relation are given in the table. Is the relation a function?

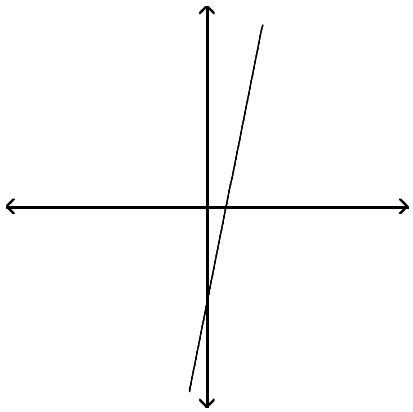
x	y
1	5
2	9
3	2
3	4
4	7

4) Some values for a relation are given in the table. Is the relation a function?

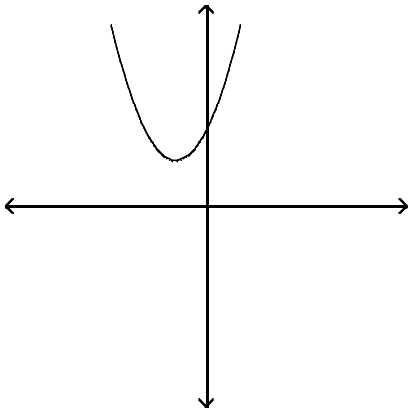
x	y
1	2
2	7
3	7
4	1
5	9

Determine whether the graph is the graph of a function.

5)



6)



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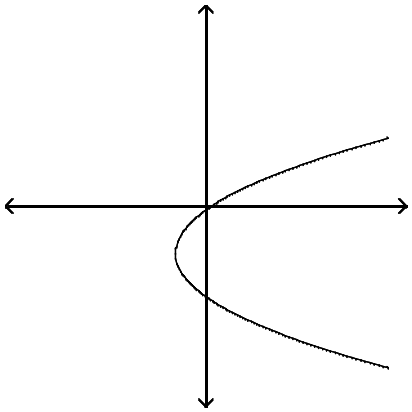

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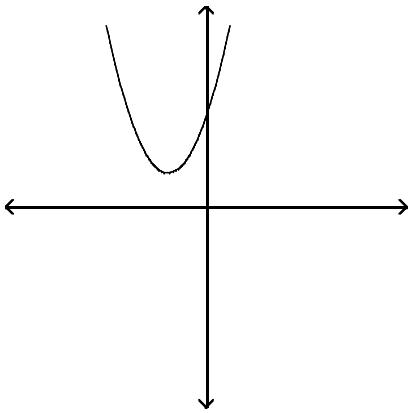

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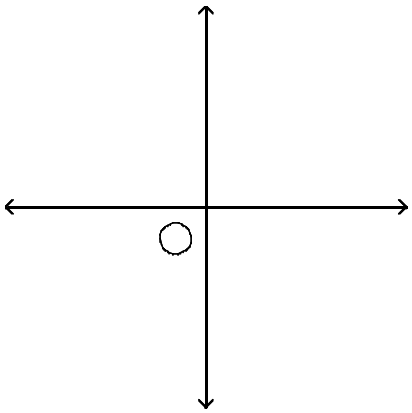

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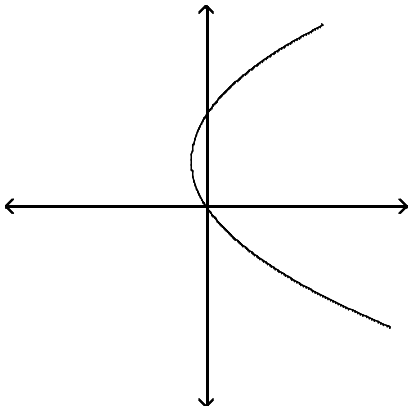

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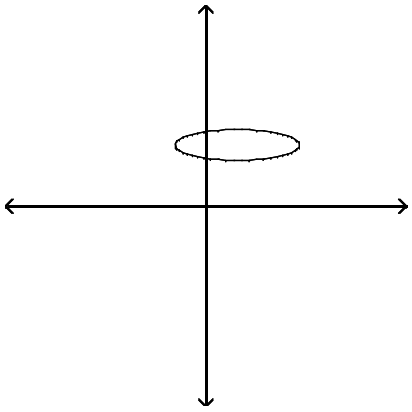

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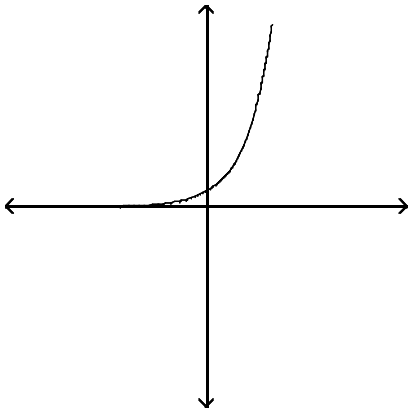

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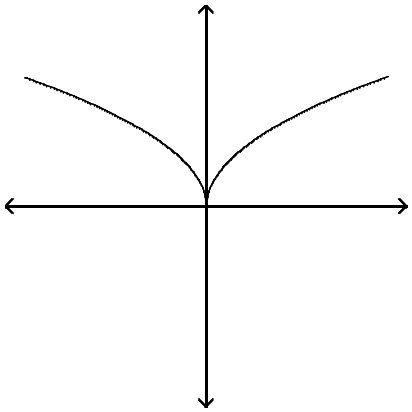

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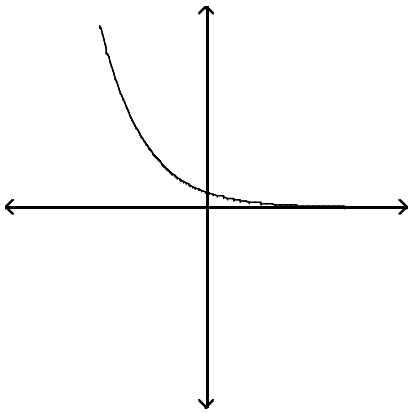

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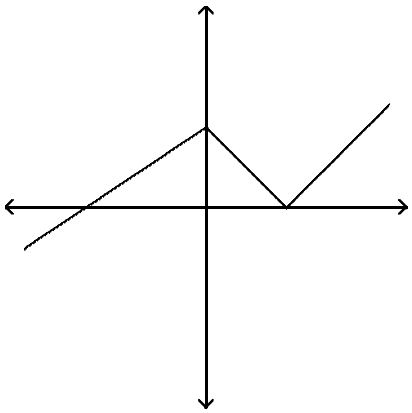

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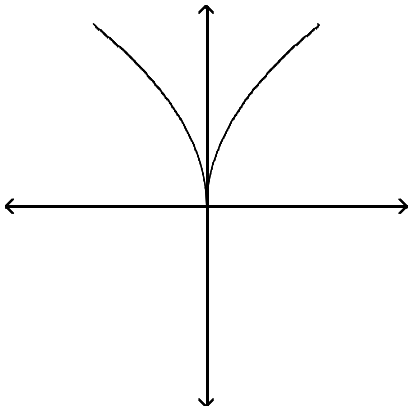

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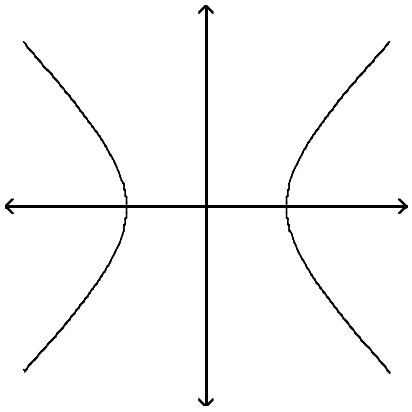

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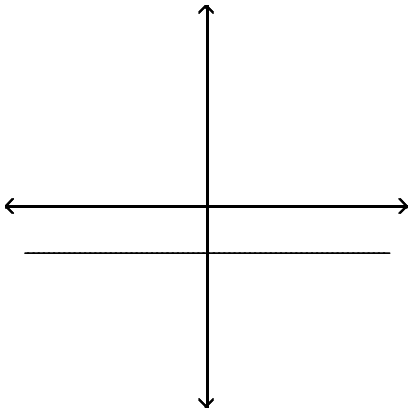

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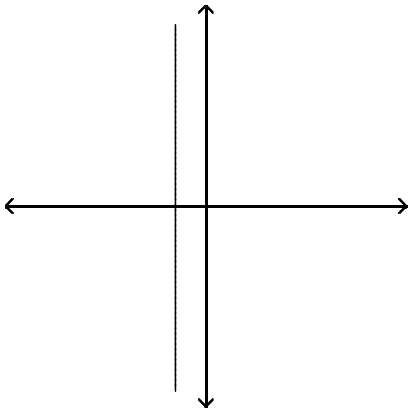

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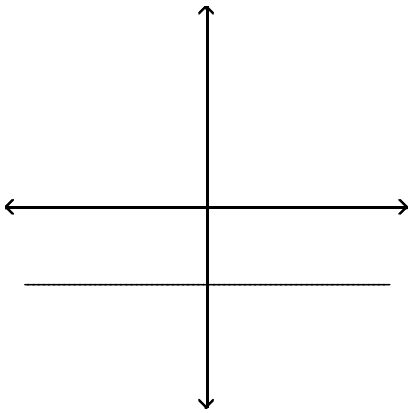

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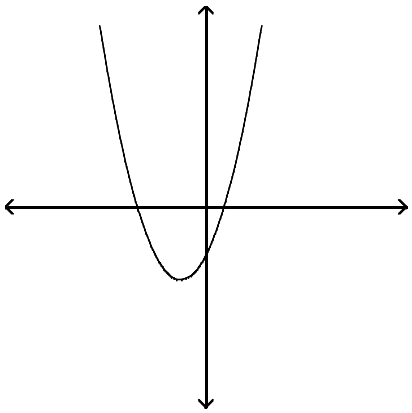

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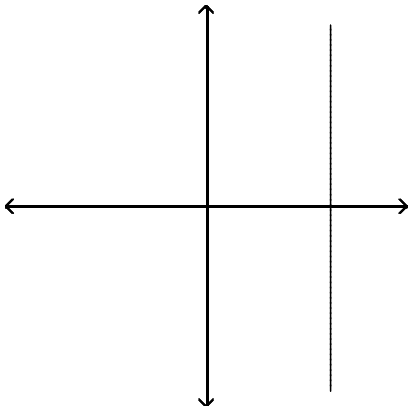

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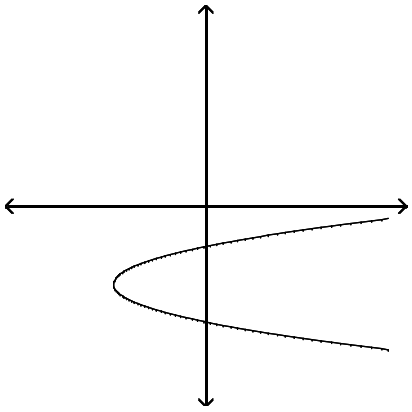


Decide whether the relation defines a function.

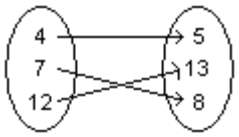
24) {(–3, 5), (1, –3), (5, 2), (8, –4), (10, –4)}

25) {(–4, 1), (–3, –6), (3, –7), (3, 7)}

26) {(–8, 2), (–8, 8), (1, 1), (3, –2), (10, –6)}

27) {(–3, 2), (–1, –4), (3, –7), (5, 4)}

28)



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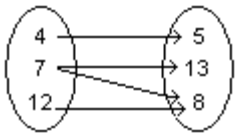

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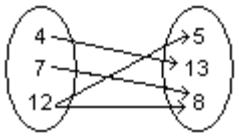


31) Student Test Score

Name	Test Score
Bob L.	85
Susan H.	83
Jim H.	76
Bruce B.	96

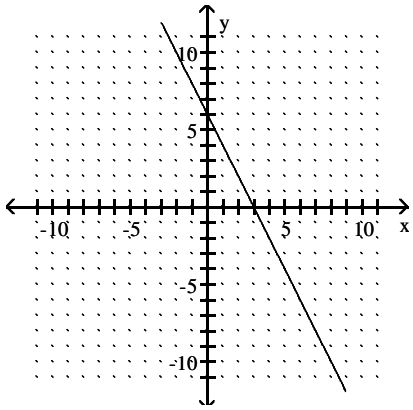
32) Student Test Score

Name	Test Score
Bob L.	73
Susan H.	83
Jim H.	73
Bruce B.	96

33) Annual New Telemarketing Companies

Year	Number
1995	66
1996	132
1997	207
1998	208
1999	348

34)



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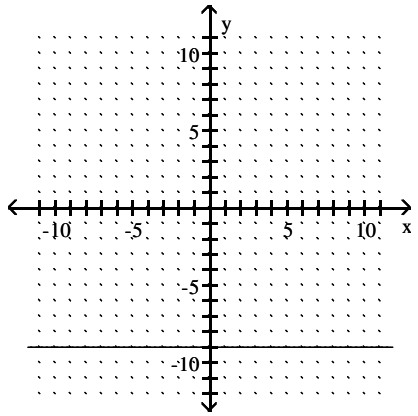

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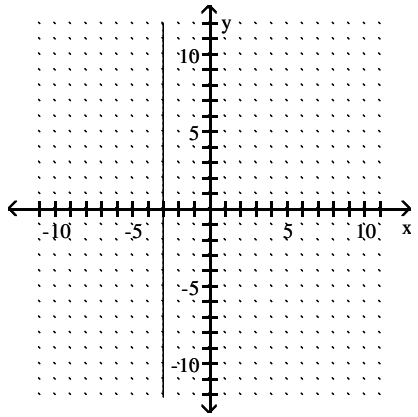

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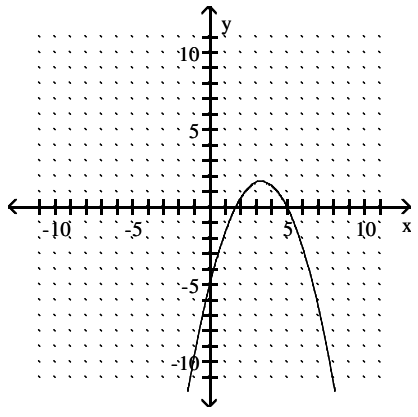

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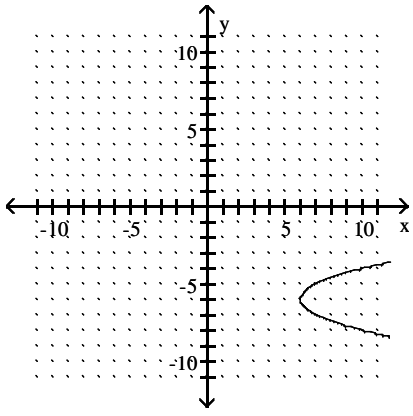

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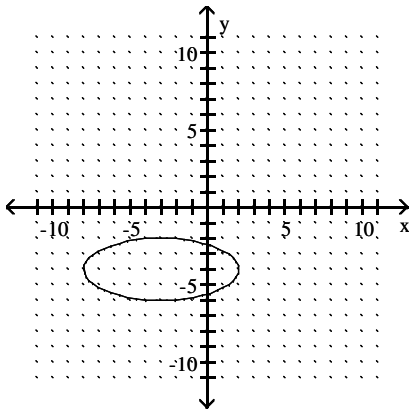

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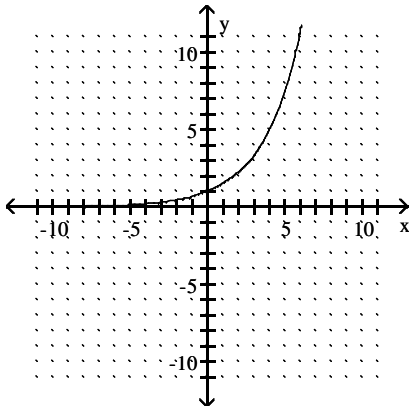

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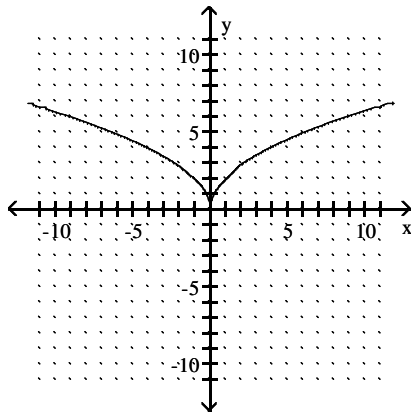

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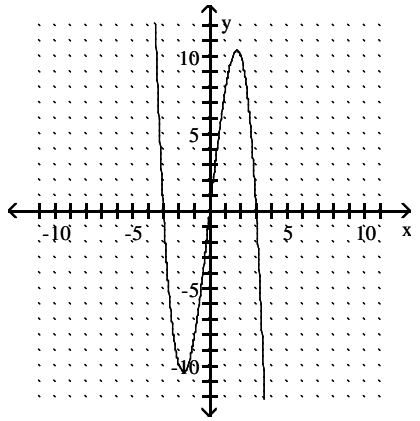

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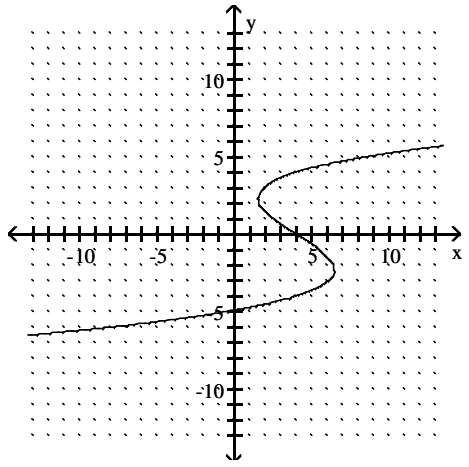

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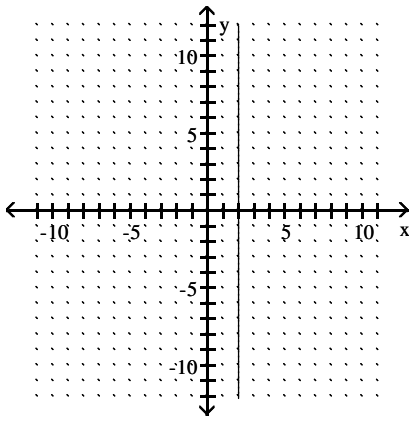

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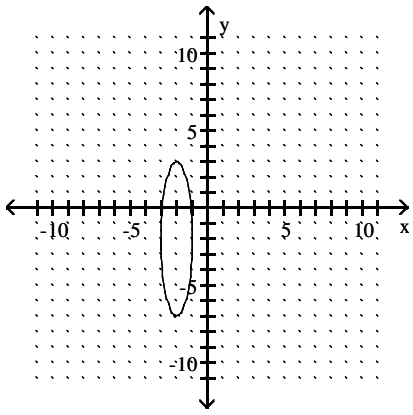

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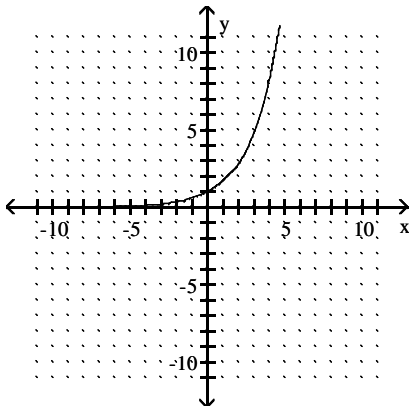


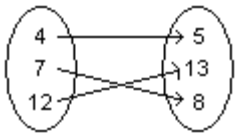
47) {(–3, –2), (1, 4), (4, 9), (8, 9), (12, –7)}

48) {(–6, 1), (–3, –6), (3, –2), (3, 2)}

49) {(–8, 2), (–8, 8), (–1, 5), (5, 3), (8, 8)}

50) {(–6, 4), (–3, 8), (3, –4), (8, 9)}

51)



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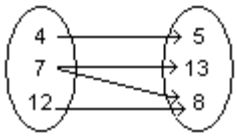

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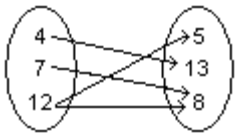


54) Student Test Score

Name	Test Score
Bob L.	72
Susan H.	83
Jim H.	76
Bruce B.	96

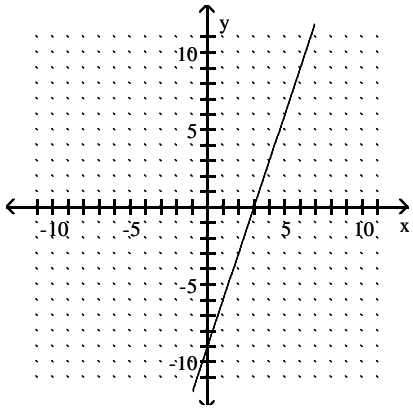
55) Student Test Score

Name	Test Score
Bob L.	77
Susan H.	83
Jim H.	77
Bruce B.	96

56) Annual New Telemarketing Companies

Year	Number
1995	35
1996	70
1997	145
1998	115
1999	255

57)



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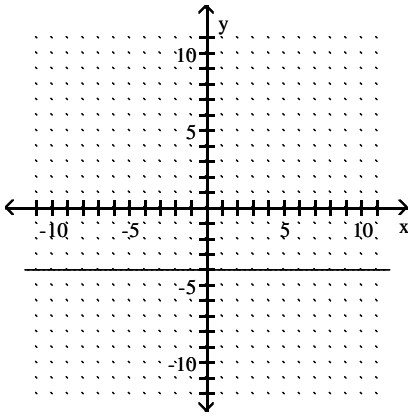

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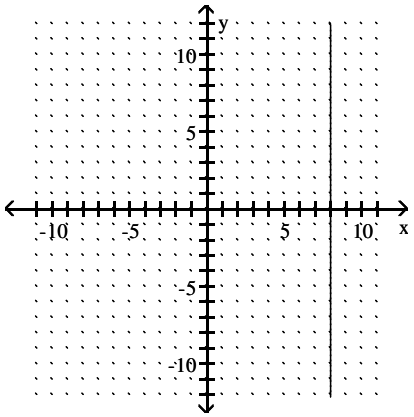

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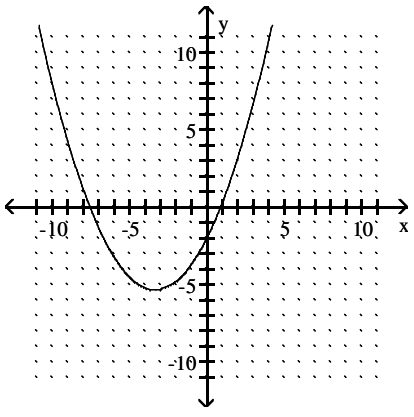

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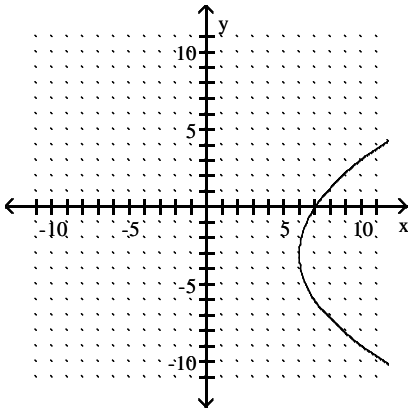

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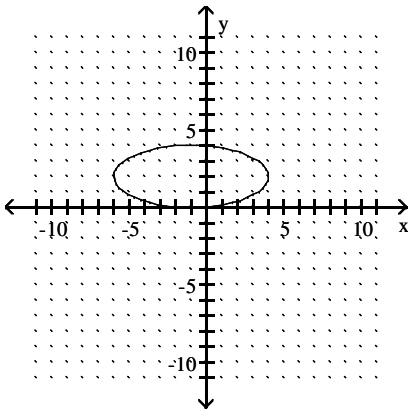

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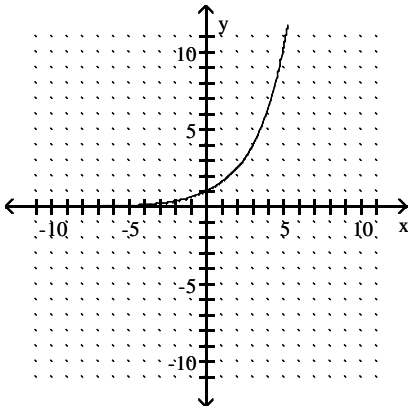

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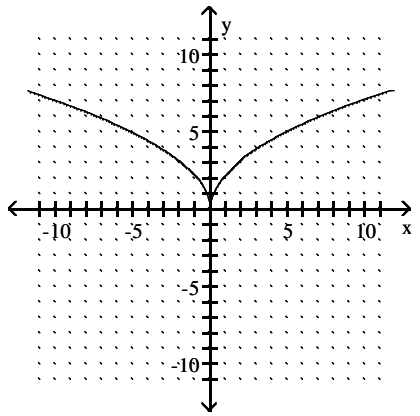

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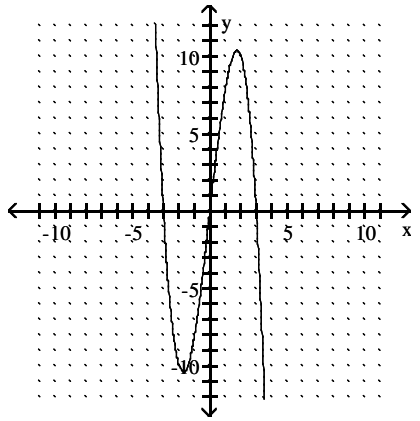

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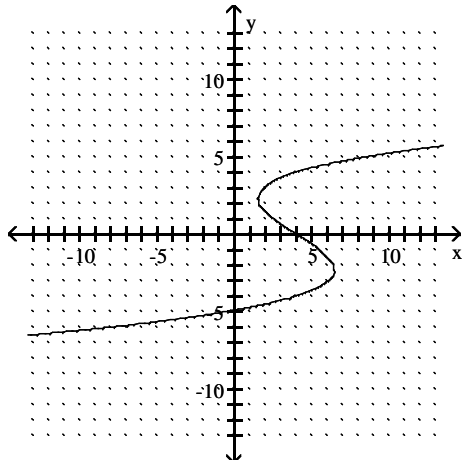
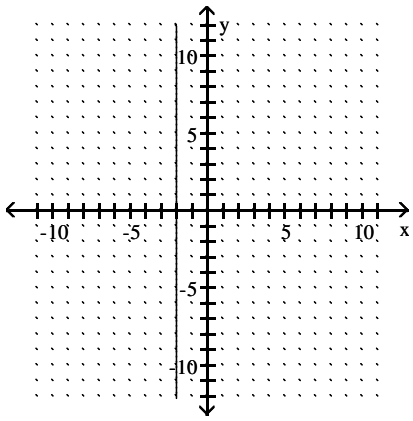


67)



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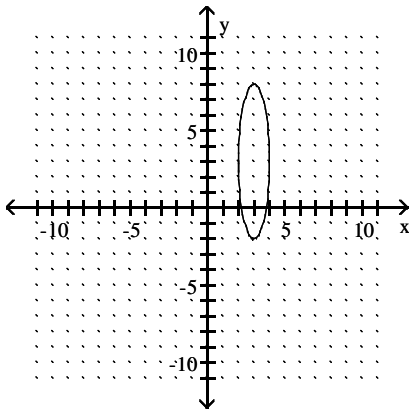

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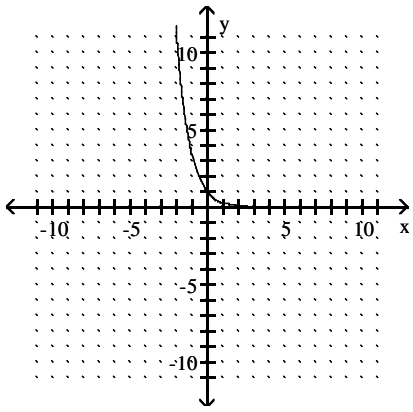


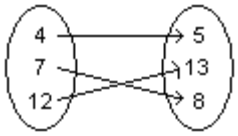
Give the domain and range of the relation.

70) {(3, 7), (–1, –9), (–6, –5), (6, 0)}

71) {(1, 8), (–3, –9), (–6, –5), (5, –9)}

72) {(1, 1), (–1, –1), (–7, –7), (5, 5)}

73)



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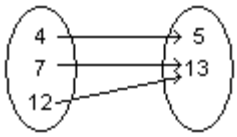

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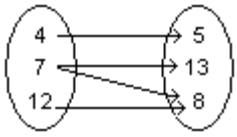

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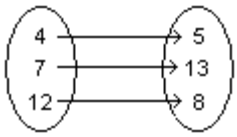
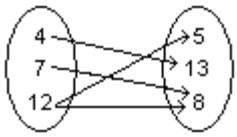


77)



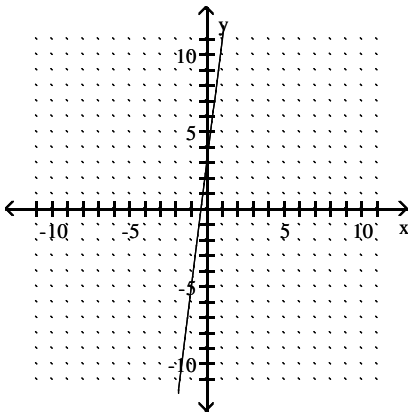
78) Annual New Telemarketing Companies

Year	Number
1995	56
1996	112
1997	187
1998	178
1999	318

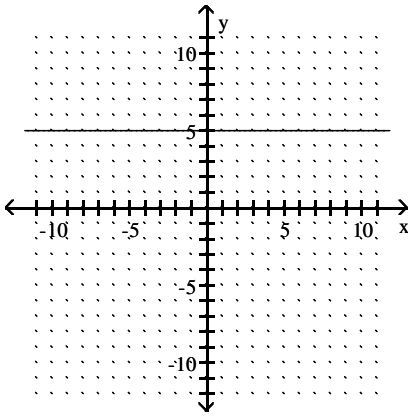
79) Annual New Telemarketing Companies

Year	Number
1993	52
1994	102
1995	187
1996	170
1997	218

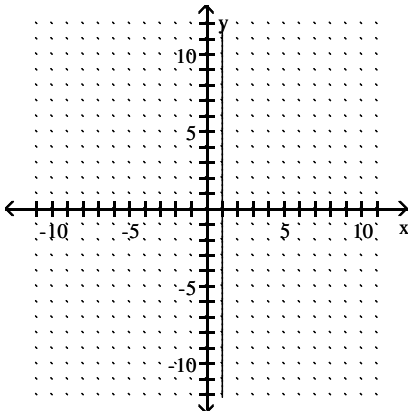
80)



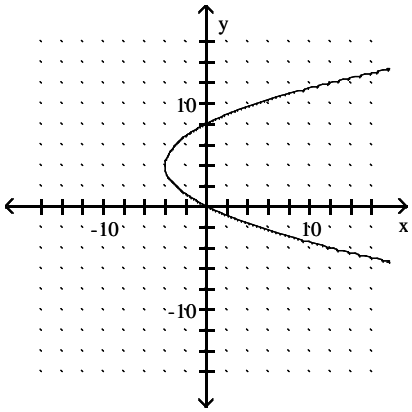
81)



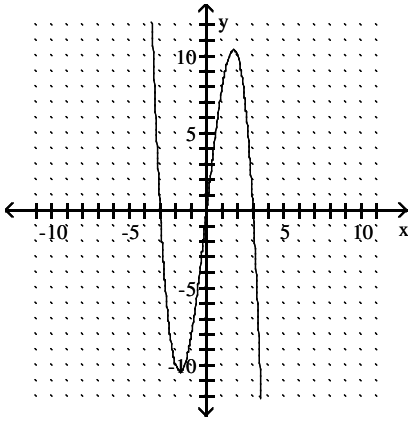
82)



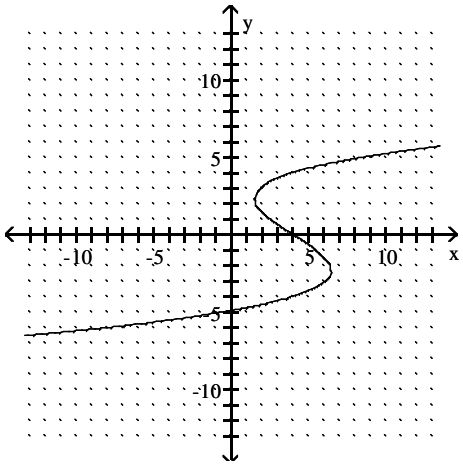
83)



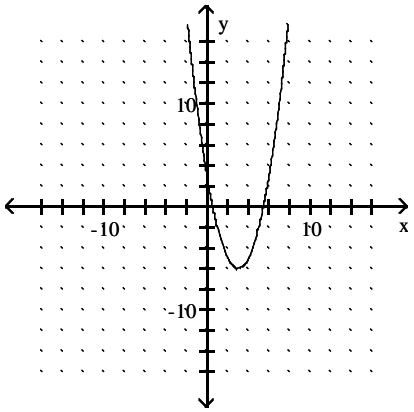
84)



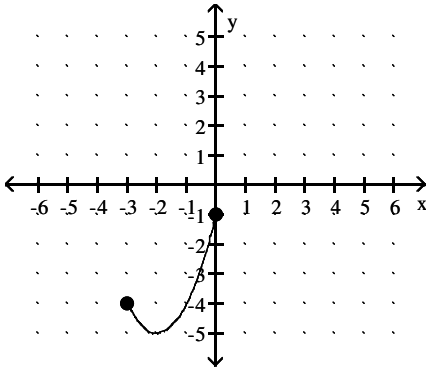
85)



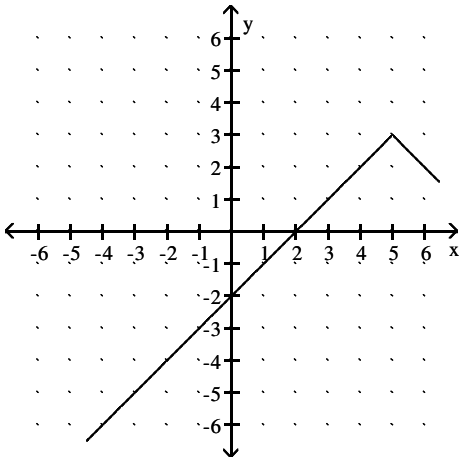
86)



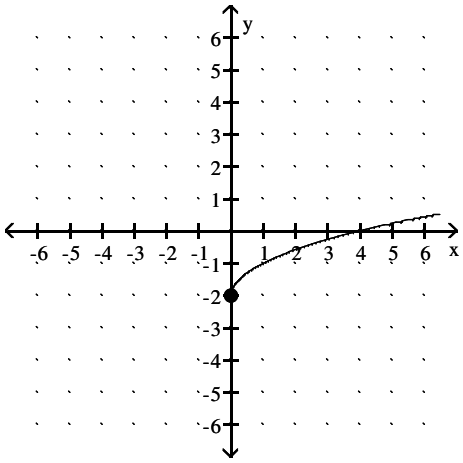
87)



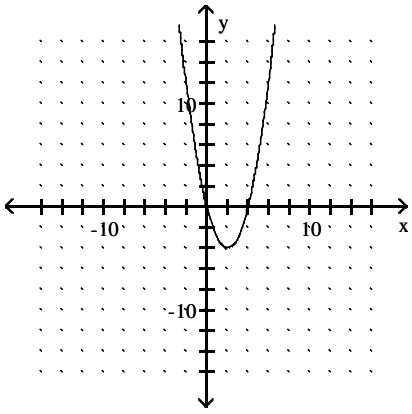
88)



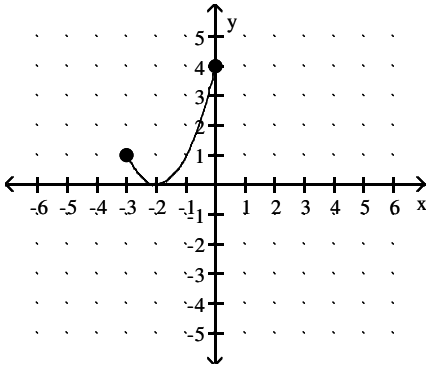
89)



90)



91)



Determine whether the function is a one–to–one function.

92) f = {(–13, 20), (–9, 16), (–14, 17)}

93) f = {(5, 19), (12, 2), (7, 6)}

94) f = {(–2, 4), (–1, 4), (0, 9), (1, –8)}

95) f = {(–5, –1), (5, 1), (6, 3), (–6, –3)}

96) f = {(8, 5), (–8, –5), (8, –3), (–8, 3)}

97) f = {(6, –2), (–1, –1), (–3, 0), (–5, 1)}

98) f = {(6, –6), (9, –5), (7, –4), (5, –3)}

99) f = {(9, –7), (7, –9), (2, –3), (–2, 3)}

100) f = {(–2, –1), (1, 2), (7, 8), (–7, –8)}

101) f = {(–17, –12), (–11, –12), (9, 8)}

102) f = {(9, 16), (18, 16), (10, –13)}

103) f = {(3, 8), (4, 8), (5, 7), (6, –2)}

104) f = {(–5, –9), (–4, –9), (–3, –8), (–2, –6)}

105)

Month of 1999 (input)	Jan	Feb	Mar	Apr
Sales of Product B (output)	3497	3971	3181	3813

106)

Weekdays (input)	Monday	Tuesday	Wed
Student: Avg. Minutes of Study(output)	242	325	

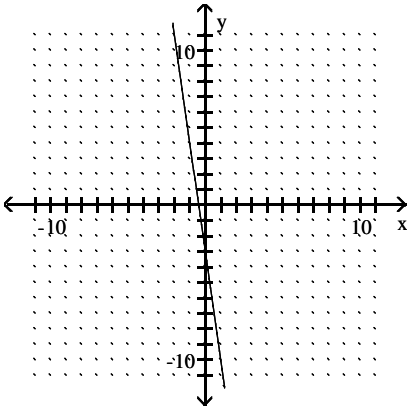
107) f = {(–4, –8), (–3, –8), (–2, 5), (–1, –1)}

108) f = {(6, –9), (0, –8), (–2, –7), (–4, –6)}

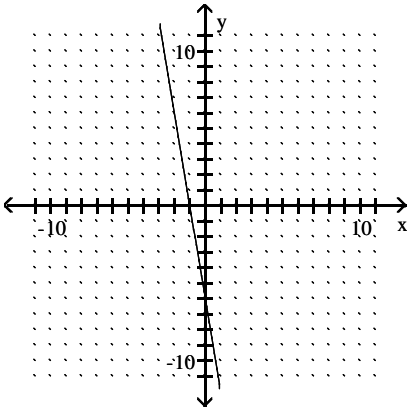
109) f = {(8, –3), (3, –8), (1, 5), (–1, –5)}

Determine whether the graph of the function is the graph of a one–to–one function. (Use Horizontal Line Test!)

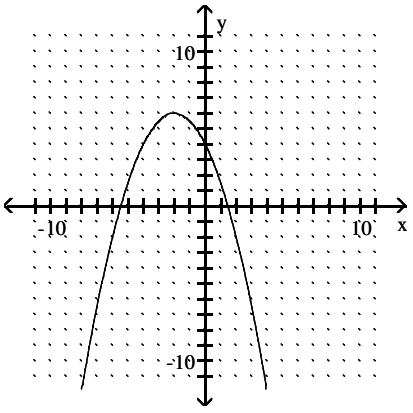
110)



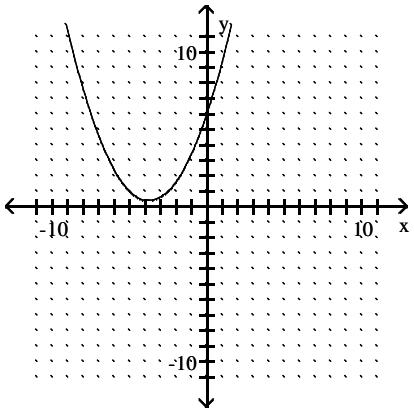
111)



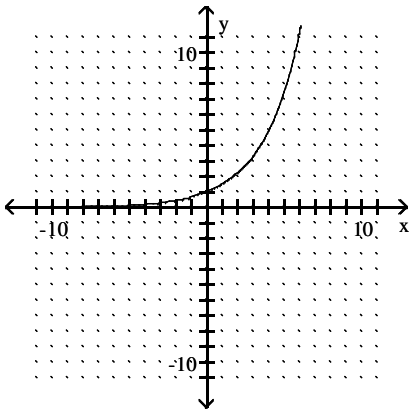
112)



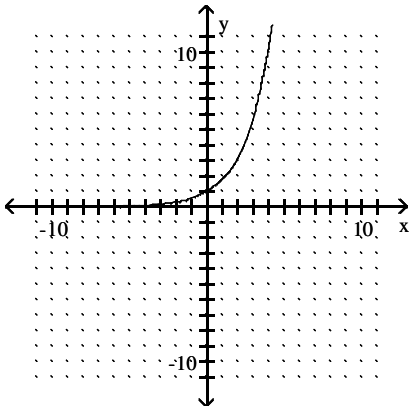
113)



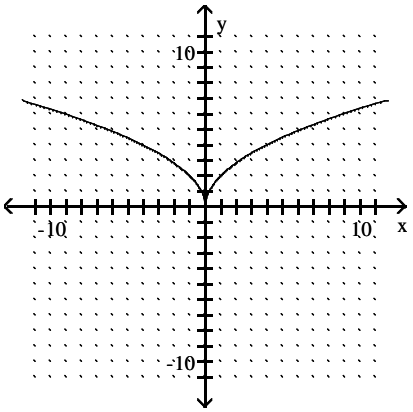
114)



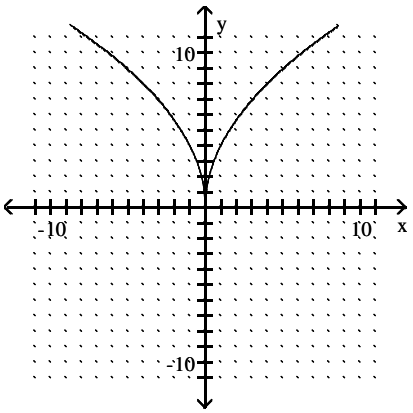
115)



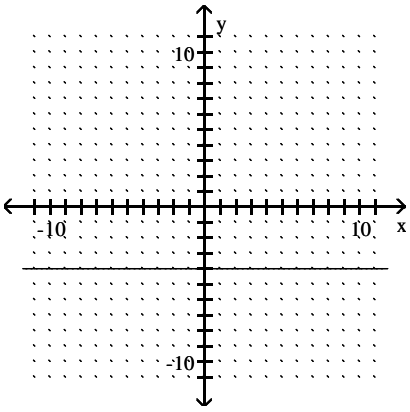
116)



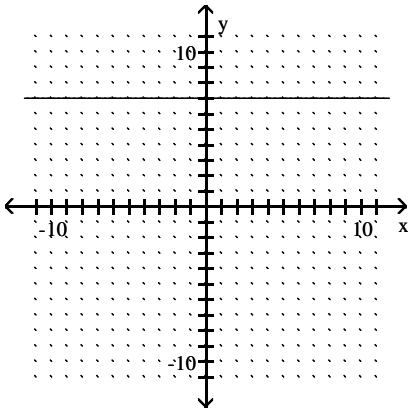
117)



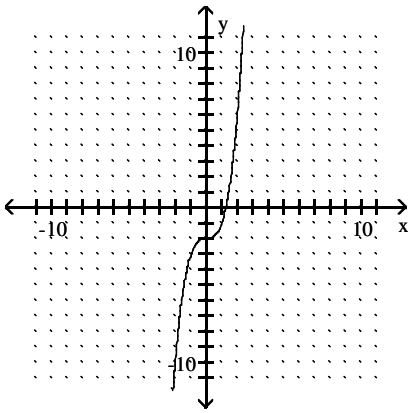
118)



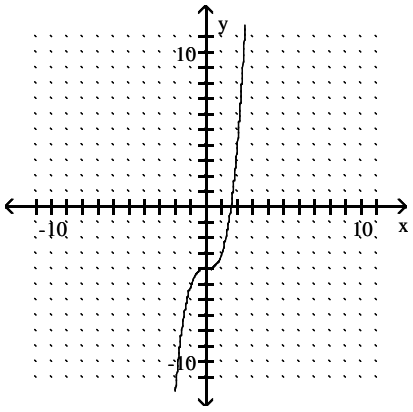
119)



120)



121)



If the function is one–to–one, list the inverse function by switching coordinates or inputs and outputs.

122) f = {(6, –6), (16, –8), (–19, 5)}

123) f = {(10, 8), (9, –12), (1, –7)}

124) f = {(–3, 9), (3, –9), (4, –7), (–4, 7)}

125) f = {(–7, –6), (7, 6), (5, 8), (–5, –8)}

126) f = {(6, –5), (5, –4), (3, –3), (1, –2)}

127) f = {(6, –10), (1, –9), (–1, –8), (–3, –7)}

128) f = {(3, 2), (–2, –3), (6, –9), (–6, 9)}

129) f = {(–2, –4), (4, 2), (–9, 6), (9, –6)}

130) f = {(7, –4), (4, –7), (8, –9), (–8, 9)}

131)

Weekdays (input)	Mon.	Tue.	Wed.	Thu.	I
Student: Avg. Minutes of Study(output)	388	323	187	323	1

132)

Weekdays (input)	Mon.	Tue.	Wed.	Thu.	I
Student: Avg. Minutes of Study(output)	381	326	186	326	1

133)

Month of 1999 (input)	Jan	Feb	Mar	Apr
Sales of Product A (output)	5004	5120	5468	5932

134)

Month of 1999 (input)	Jan	Feb	Mar	Apr
Sales of Product A (output)	5018	5180	5666	6314

135) f = {(4, –2), (–4, 2), (–3, 4), (3, –4)}

136) f = {(6, –10), (9, –9), (7, –8), (5, –7)}

Solve the problem.

137) Complete the table below by using the table of values for f to complete the table of values for f^{-1}.

x	f(x)
1	21
2	17
3	13
4	9

x	$f^{-1}(x)$
9	
13	
17	
21	

138) Complete the table below by using the table of values for f to complete the table of values for f^{-1}.

x	f(x)
1	2
2	5
3	8
4	11

x	$f^{-1}(x)$
2	
5	
8	
11	

139) Complete the table below by using the table of values for f to complete the table of values for f^{-1}.

x	f(x)
1	2
2	5
3	8
4	11

x	$f^{-1}(x)$
2	
5	
8	
11	

140) Complete the table below by using the table of values for f to complete the table of values for f^{-1}.

x	f(x)
1	21
2	17
3	13
4	9

x	$f^{-1}(x)$
9	
13	
17	
21	

141) Let $f(x) = 3^x$.

i) Find f(3).

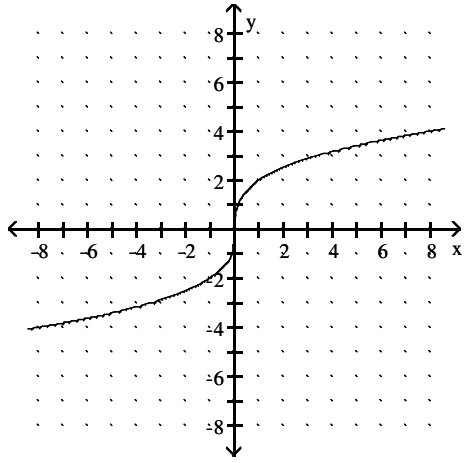
ii) Find $f^{-1}(3)$.

iii) Find x when f(x) = 9.

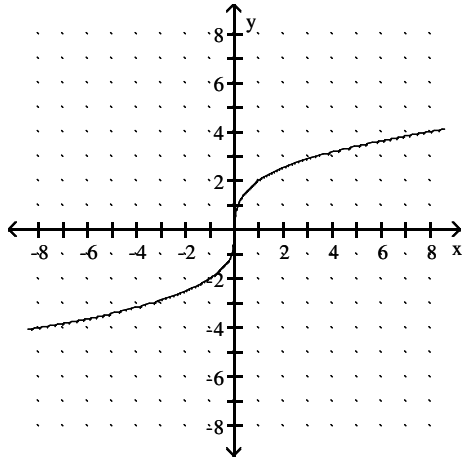
iv) Find x when $f^{-1}(x) = 9$.

Refer to the graph of the invertible function g to solve the problem.

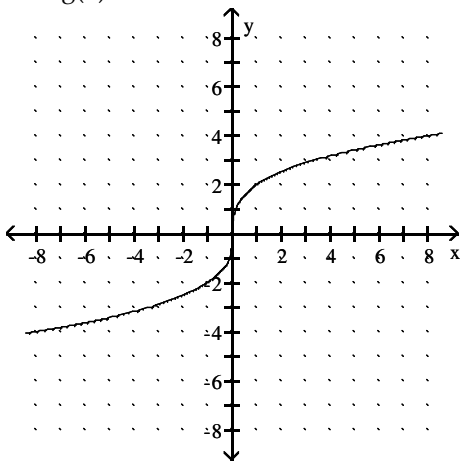
142) Find g(0)



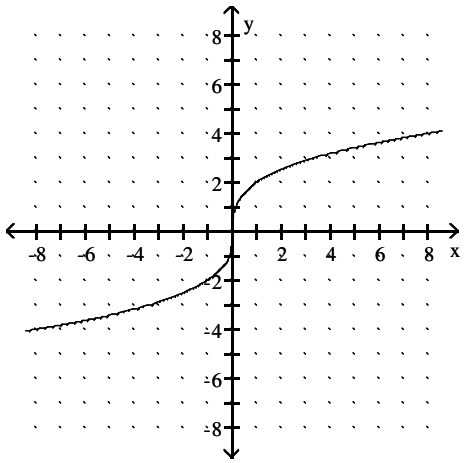
143) Find g(8)



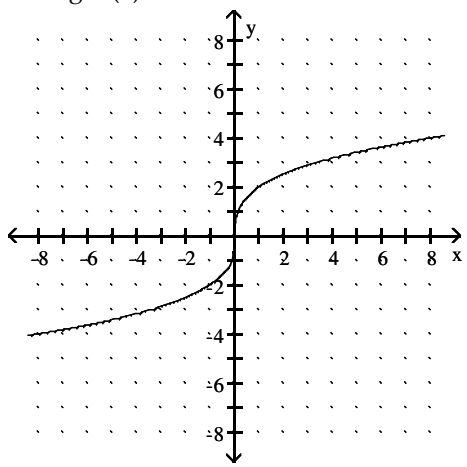
144) Find g(0)



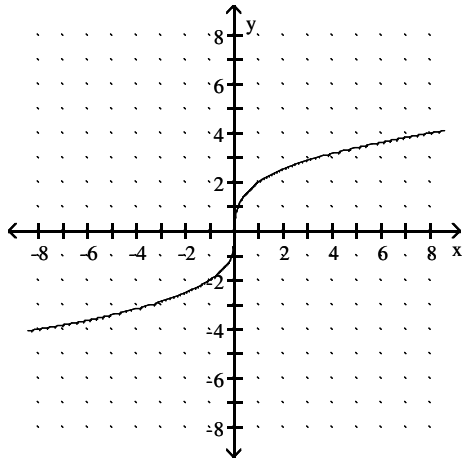
145) Find g(-1)



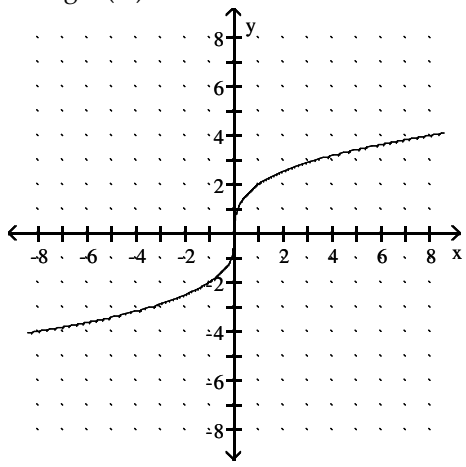
146) Find $g^{-1}(4)$



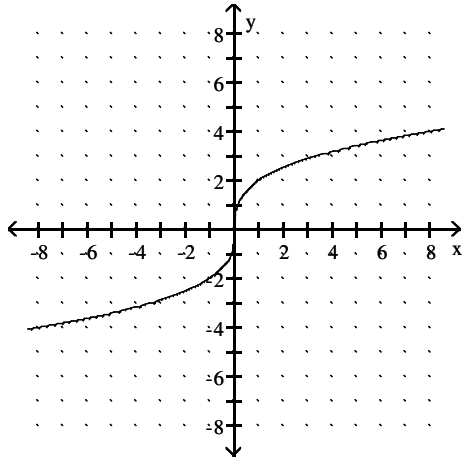
147) Find $g^{-1}(2)$



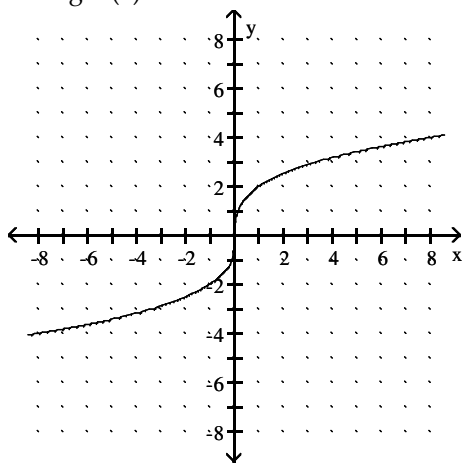
148) Find $g^{-1}(-2)$



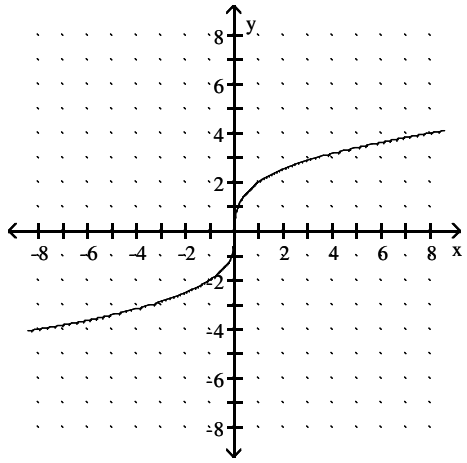
149) Find g(-8)



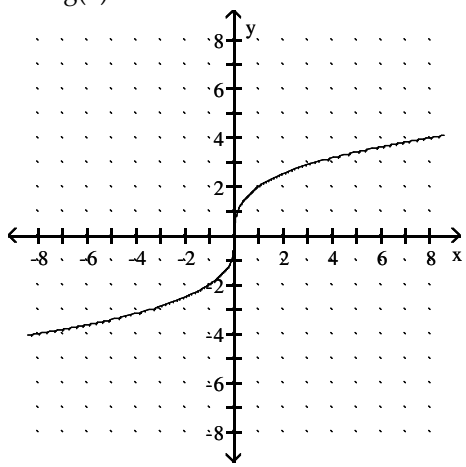
150) Find $g^{-1}(0)$



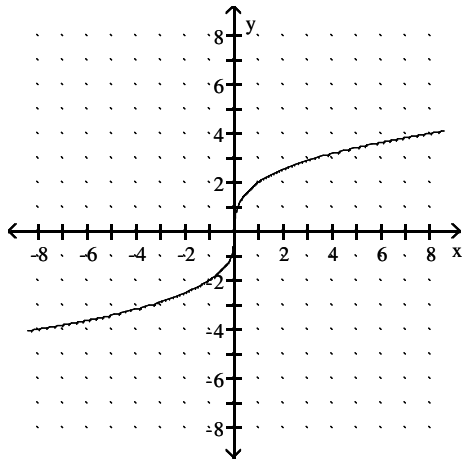
151) Find $g^{-1}(-4)$



152) Find g(1)



153) Find g(8)



Find the inverse of the one–to–one function.

154) $f(x) = 6x + 4$

155) $f(x) = 2x + 4$

156) $f(x) = 4x + 7$

157) $f(x) = x^3 + 8$

158) $f(x) = x^3 + 6$

159) $f(x) = \frac{5x + 3}{2}$

160) $f(x) = \frac{7x + 1}{3}$

161) $f(x) = \sqrt[3]{x - 4}$

162) $f(x) = \sqrt[3]{x + 3}$

163) $f(x) = \frac{8}{5x - 3}$

164) $f(x) = \frac{6}{7x + 5}$

165) $f(x) = (x + 3)^3 - 5$

166) $f(x) = (x + 4)^3 + 7$

167) $f(x) = 3x + 3$

168) $f(x) = x^3 + 4$

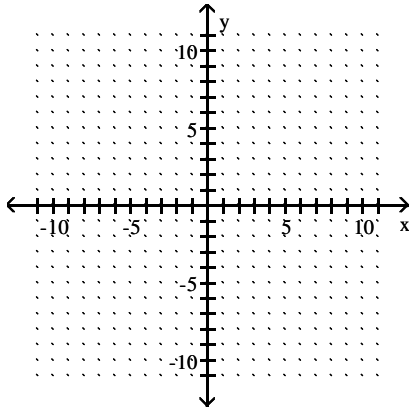
169) $f(x) = \frac{8x - 7}{3}$

170) $f(x) = \frac{5}{6x - 7}$

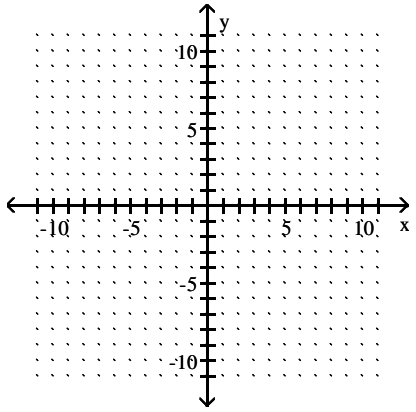
171) $f(x) = \frac{5}{2x + 3}$

Graph the function and its inverse on the same set of axes.

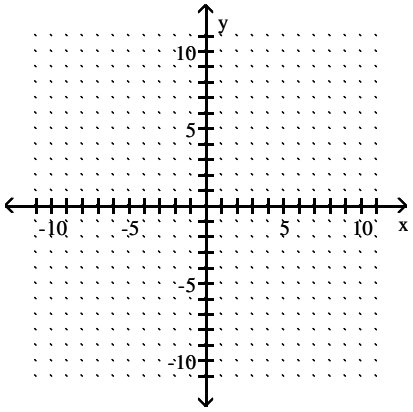
172) $f(x) = 5x$



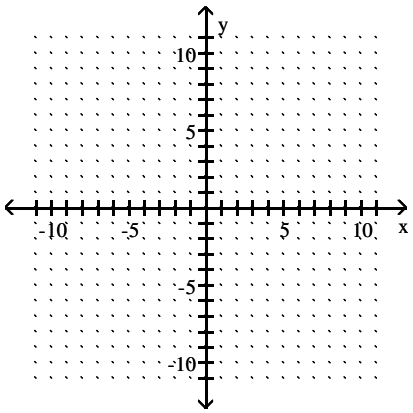
173) $f(x) = 2x + 4$



174) $f(x) = \frac{1}{2}x + 3$

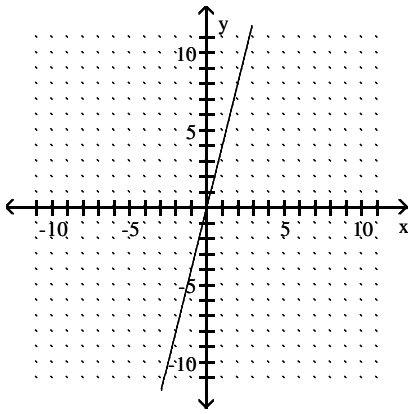


175) $f(x) = x^3 + 2$

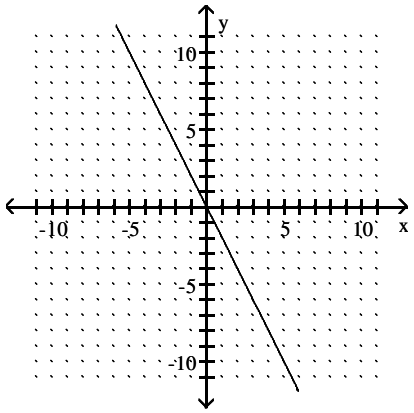


Graph the inverse of the function on the same set of axes.

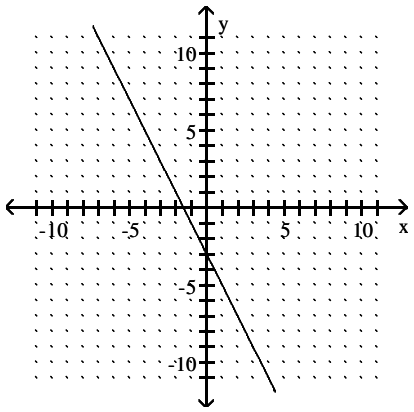
176)



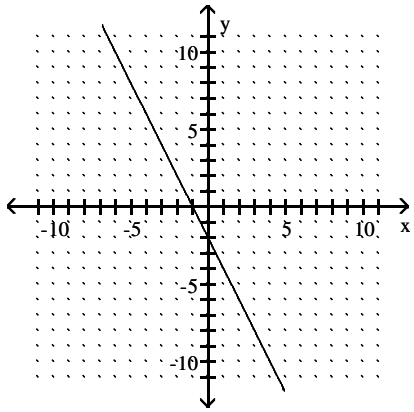
177)



178)



179)



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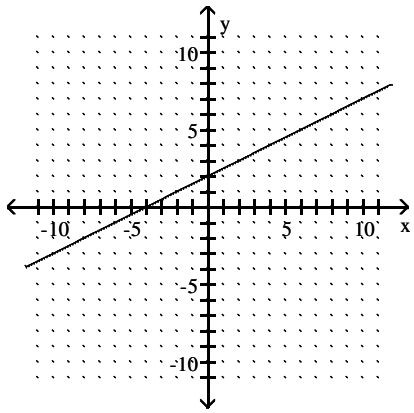
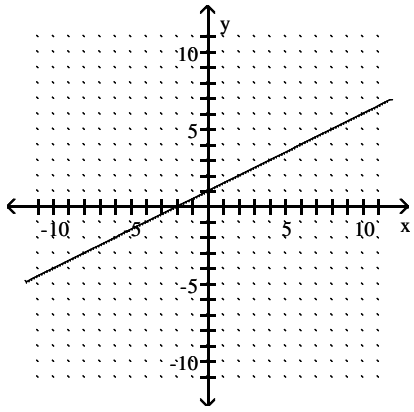
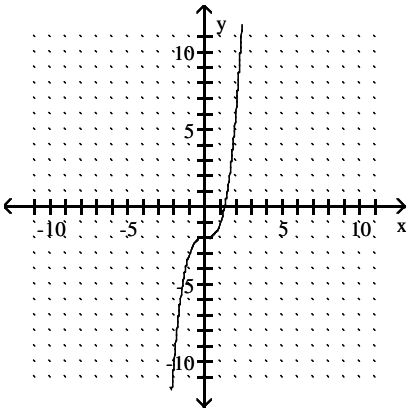


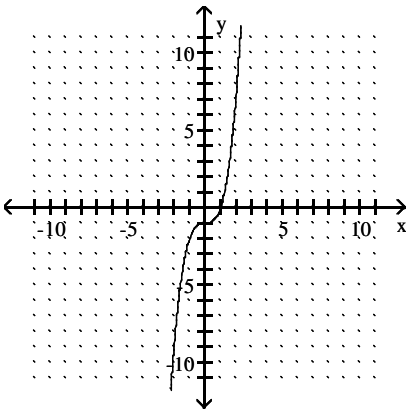
181)



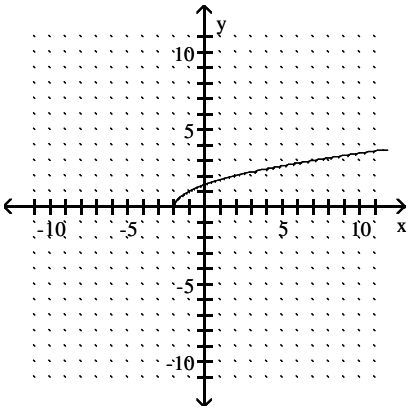
182)



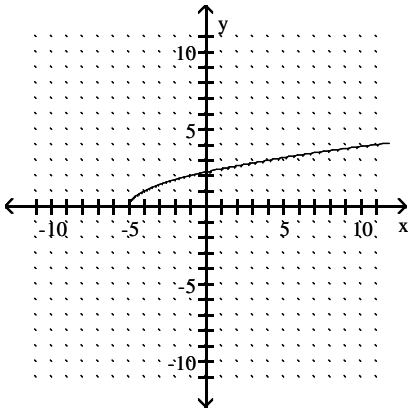
183)



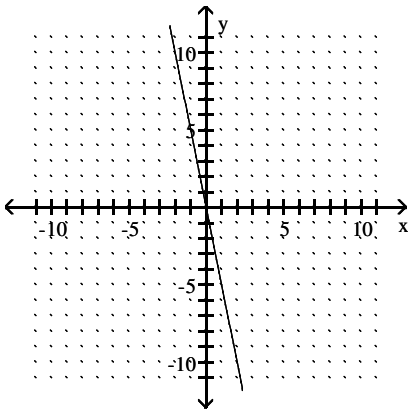
184)



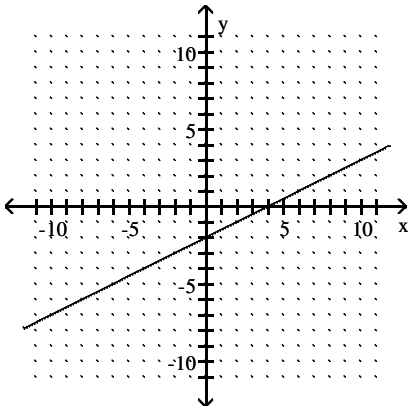
185)



186)



187)



1) No
2) Yes
3) No
4) Yes
5) function
6) function
7) function
8) not a function
9) not a function
10) not a function
11) not a function
12) function
13) function
14) function
15) function
16) function
17) not a function
18) function
19) function
20) not a function
21) not a function
22) function
23) not a function
24) Function
25) Not a function
26) Not a function
27) Function
28) Function
29) Not a function
30) Not a function
31) Function
32) Function
33) Function
34) Function
35) Function
36) Not a function
37) Function
38) Not a function
39) Not a function
40) Function
41) Function
42) Function
43) Not a function
44) Not a function
45) Not a function
46) Function
47) Function
48) Not a function
49) Not a function
50) Function

51) Function
52) Not a function
53) Not a function
54) Function
55) Function
56) Function
57) Function
58) Function
59) Not a function
60) Function
61) Not a function
62) Not a function
63) Function
64) Function
65) Function
66) Not a function
67) Not a function
68) Not a function
69) Function
70) domain: {–6, –1, 3, 6}; range: {–9, –5, 0, 7}
71) domain: {–6, –3, 1, 5}; range: {–9, –5, 8}
72) domain: {–7, –1, 1, 5}; range: {–7, –1, 1, 5}
73) domain: {4, 7, 12}; range: {5, 8, 13}
74) domain: {4, 7, 12}; range: {5, 13}
75) domain: {4, 7, 12}; range: {5, 8, 13}
76) domain: {4, 7, 12}; range: {5, 8, 13}
77) domain: {5, 8, 13}; range: {4, 7, 12}
78) domain: {1995, 1996, 1997, 1998, 1999}; range: {56, 112, 178, 187, 318}
79) domain: {1993, 1994, 1995, 1996, 1997}; range: {52, 102, 170, 187, 218}
80) domain: (–∞, ∞); range: (–∞, ∞)
81) domain: (–∞, ∞); range: {5}
82) domain: {1}; range: (–∞, ∞)
83) domain: [–4, ∞); range: (–∞, ∞)
84) range: (–∞, ∞); domain: (–∞, ∞)
85) range: (–∞, ∞); domain: (–∞, ∞)
86) domain: (–∞, ∞); range: [–6, ∞)
87) domain: [–3, 0]; range: [–5, –1]
88) domain: (–∞, ∞); range: (–∞, 3]
89) domain: [0, ∞); range: [–2, ∞)
90) domain: (–∞, ∞); range: [–4, ∞)
91) domain: [–3, 0]; range: [–0, 4]
92) one–to–one
93) one–to–one
94) not one–to–one
95) one–to–one
96) one–to–one
97) one–to–one
98) one–to–one
99) one–to–one
100) one–to–one

101) not one–to–one
102) not one–to–one
103) not one–to–one
104) not one–to–one
105) not one–to–one
106) one–to–one
107) not one–to–one
108) one–to–one
109) one–to–one
110) Yes
111) Yes
112) No
113) No
114) Yes
115) Yes
116) No
117) No
118) No
119) No
120) Yes
121) Yes
122) $f^{-1} = \{(-6, 6), (-8, 16), (5, -19)\}$
123) $f^{-1} = \{(8, 10), (-12, 9), (-7, 1)\}$
124) $f^{-1} = \{(9, -3), (-9, 3), (-7, 4), (7, -4)\}$
125) $f^{-1} = \{(-6, -7), (6, 7), (8, 5), (-8, -5)\}$
126) $f^{-1} = \{(-5, 6), (-4, 5), (-3, 3), (-2, 1)\}$
127) $f^{-1} = \{(-10, 6), (-9, 1), (-8, -1), (-7, -3)\}$
128) $f^{-1} = \{(2, 3), (-3, -2), (-9, 6), (9, -6)\}$
129) $f^{-1} = \{(-4, -2), (2, 4), (6, -9), (-6, 9)\}$
130) $f^{-1} = \{(-4, 7), (-7, 4), (-9, 8), (9, -8)\}$
131) not one–to–one
132) not one–to–one
133)

Sales of Product A (input)	5004	5120	5468	5932	5352	5584
Month of 1999 (output)	Jan	Feb	Mar	Apr	May	Jun

134)

Sales of Product A (input)	5018	5180	5666	6314	5504	5828
Month of 1999 (output)	Jan	Feb	Mar	Apr	May	Jun

135) $f^{-1} = \{(-2, 4), (2, -4), (4, -3), (-4, 3)\}$
136) $f^{-1} = \{(-10, 6), (-9, 9), (-8, 7), (-7, 5)\}$

137)

x	f(x)
1	21
2	17
3	13
4	9

x	$f^{-1}(x)$
9	4
13	3
17	2
21	1

138)

x	f(x)
1	2
2	5
3	8
4	11

x	$f^{-1}(x)$
2	1
5	2
8	3
11	4

139)

x	f(x)
1	2
2	5
3	8
4	11

x	$f^{-1}(x)$
2	1
5	2
8	3
11	4

140)

x	f(x)
1	21
2	17
3	13
4	9

x	$f^{-1}(x)$
9	4
13	3
17	2
21	1

141) i) 27
ii) 1
iii) 2
iv) 19,683

142) 0

143) 4

144) 0

145) -2

146) 8

147) 1

148) -1

149) -4

150) 0

151) -8

152) 2

153) 4

154) $f^{-1}(x) = \frac{x - 4}{6}$

155) $f^{-1}(x) = \frac{x - 4}{2}$

156) $f^{-1}(x) = \frac{x - 7}{4}$

157) $f^{-1}(x) = \sqrt[3]{x - 8}$

158) $f^{-1}(x) = \sqrt[3]{x - 6}$

159) $f^{-1}(x) = \frac{2x - 3}{5}$

160) $f^{-1}(x) = \frac{3x - 1}{7}$

161) $f^{-1}(x) = x^3 + 4$

162) $f^{-1}(x) = x^3 - 3$

163) $f^{-1}(x) = \frac{8}{5x} + \frac{3}{5}$

164) $f^{-1}(x) = \frac{6}{7x} - \frac{5}{7}$

165) $f^{-1}(x) = \sqrt[3]{x + 5} - 3$

166) $f^{-1}(x) = \sqrt[3]{x - 7} - 4$

167) $f^{-1}(x) = \frac{x - 3}{3}$

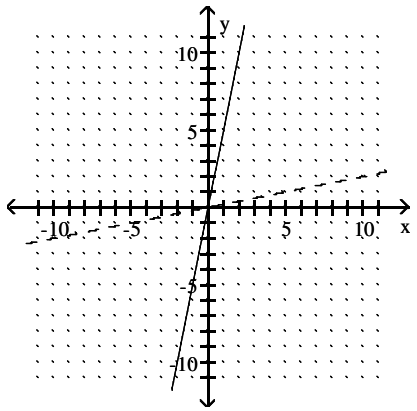
168) $f^{-1}(x) = \sqrt[3]{x - 4}$

169) $f^{-1}(x) = \frac{3x + 7}{8}$

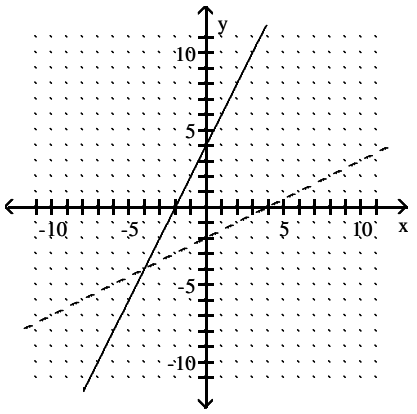
170) $f^{-1}(x) = \frac{5}{6x} + \frac{7}{6}$

171) $f^{-1}(x) = \frac{5}{2x} - \frac{3}{2}$

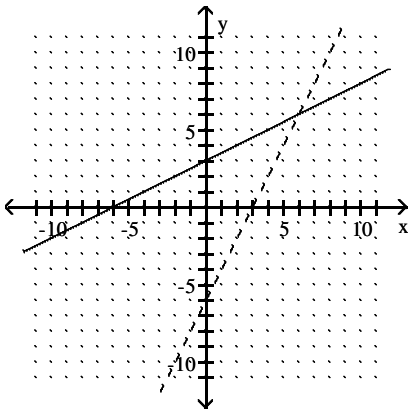
172)



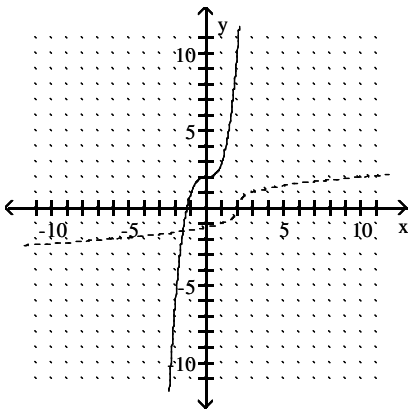
173)



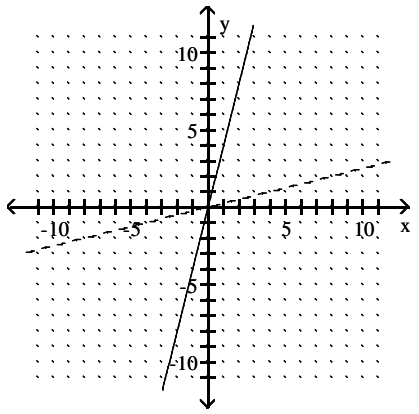
174)



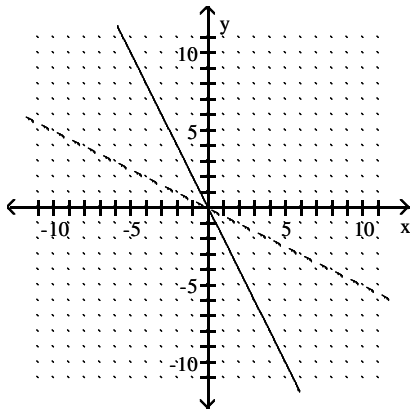
175)



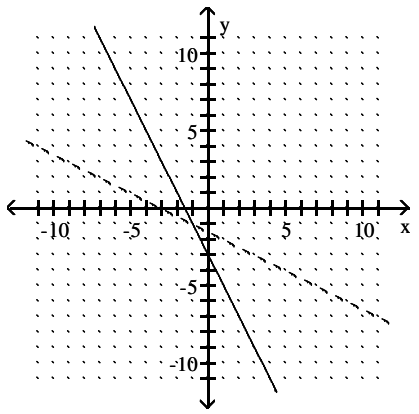
176)



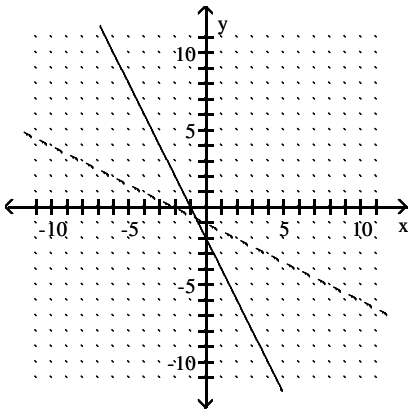
177)



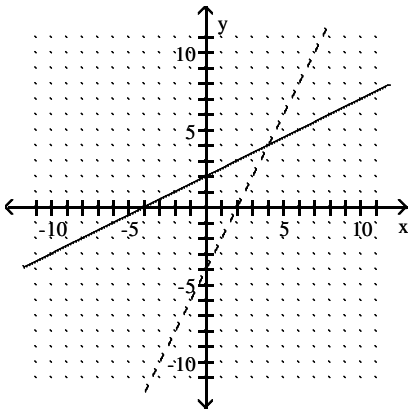
178)



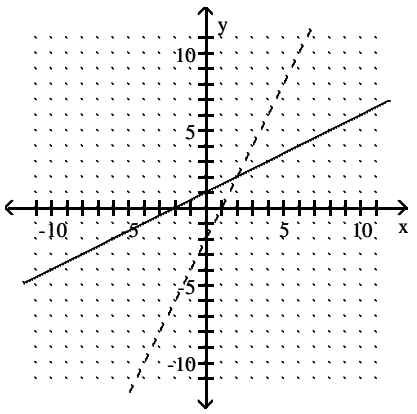
179)



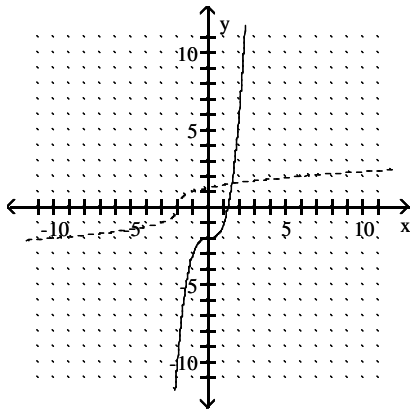
180)



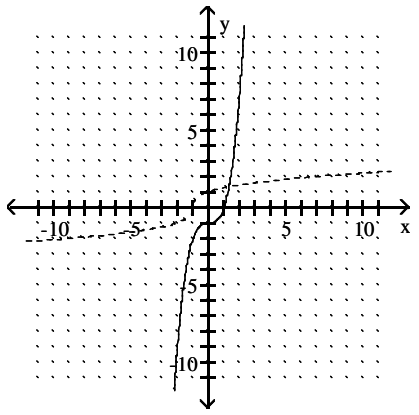
181)



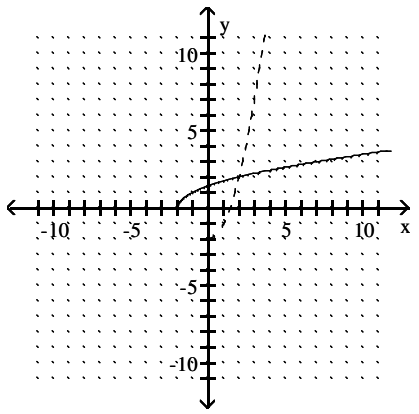
182)



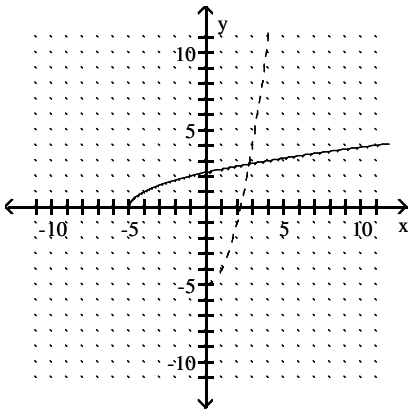
183)



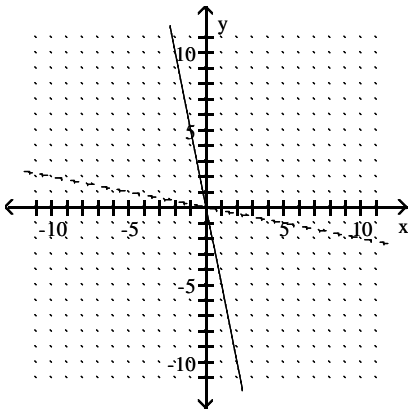
184)



185)



186)



187)