Math 098 Worksheet 5.6C Graphing with Vertical and Horizontal Asymptotes v02
NO BOOK/ NO NOTES/YES CALCUATOR
Fall 2017 Dressler

Name_____

Find any excluded values and state the domain of the rational function using interval notation or set–builder notation as appropriate.

1) $f(x) = \frac{9x - 5}{6}$ 1) _____

2) $f(x) = \frac{5x - 3}{6}$ 2) _____

3) $f(x) = \frac{7x - 2}{9}$ 3) _____

4) $f(x) = 8 + \frac{9}{x + 8}$ 4) _____

5) $f(x) = 8 + \frac{1}{x + 6}$ 5) _____

6) $f(x) = 8 + \frac{7}{x + 2}$ 6) _____

7) $f(w) = \frac{w^2 + 18w}{3w}$ 7) _____

8) $f(v) = \frac{v^2 + 18v}{3v}$ 8) _____

9) $f(v) = \frac{v^2 + 10v}{2v}$ 9) _____

10) $f(x) = \frac{4x - 8}{x^2 - 81}$ 10) _____

11) $f(x) = \frac{8x - 5}{x^2 - 16}$ 11) _____

12) $f(x) = \frac{5x - 6}{x^2 - 81}$ 12) _____

13) $f(x) = \frac{x^2 - 9}{x^2 - 7x + 10}$ 13) _____

14) $f(x) = \frac{x^2 - 16}{x^2 - 11x + 24}$ 14) _____

15) $f(x) = \frac{x^2 - 36}{x^2 - 17x + 72}$ 15) _____

Give the equations of any horizontal asymptotes.

16) $f(x) = \frac{6x^2 + 9}{6x^2 - 9}$ 16) _____

17) $g(x) = \frac{x^2 + 8x - 8}{x - 8}$ 17) _____

18) $g(x) = \frac{x + 9}{x^2 - 8}$ 18) _____

19) $h(x) = \frac{16x^2}{4x^2 - 5}$ 19) _____

20) $f(x) = \frac{x^2 + 6}{x^2 - 6}$ 20) _____

21) $h(x) = \frac{3x^2 - 4x - 7}{5x^2 - 7x + 5}$ 21) _____

22) $h(x) = \frac{8 - 8x}{-6x + 3}$ 22) _____

23) $h(x) = \frac{9 - 6x}{-3x + 2}$ 23) _____

Give the equations of any vertical asymptotes.

24) $h(x) = \frac{5}{x - 7}$ 24) _____

25) $h(x) = \frac{5}{x - 5}$ 25) _____

26) $f(x) = \frac{4x + 9}{4x - 1}$ 26) _____

27) $f(x) = \frac{x - 1}{x^2 + 3}$ 27) _____

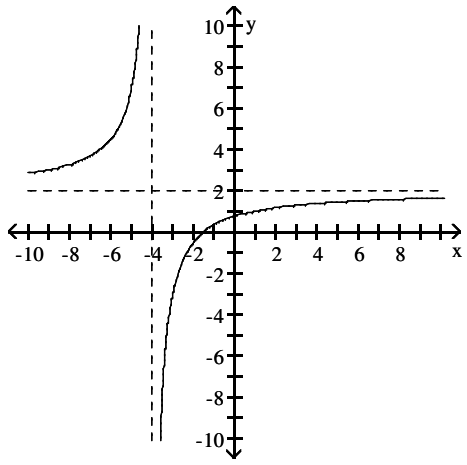
28) $h(x) = \frac{(x - 5)(x + 8)}{x^2 - 4}$ 28) _____

29) $f(x) = \frac{x - 6}{x^2 - 16}$ 29) _____

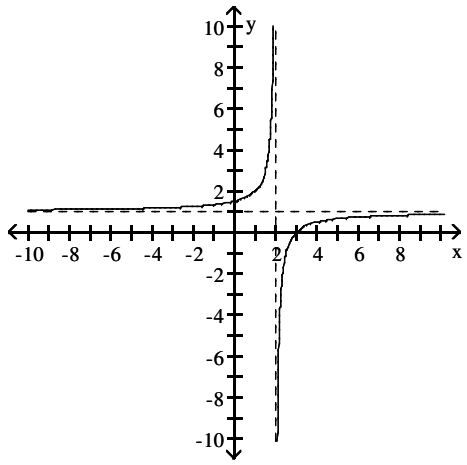
30) $f(x) = \frac{x - 1}{x^2 + 4x}$ 30) _____

31) $h(x) = \frac{(x - 5)(x + 9)}{x^2 - 4}$ 31) _____

Identify any vertical or horizontalasymptotes in the graph of y = f(x). State the domain of f.

32) 

32) _____

33) 

33) _____

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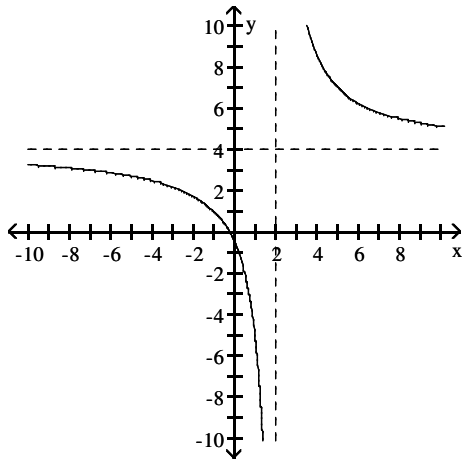
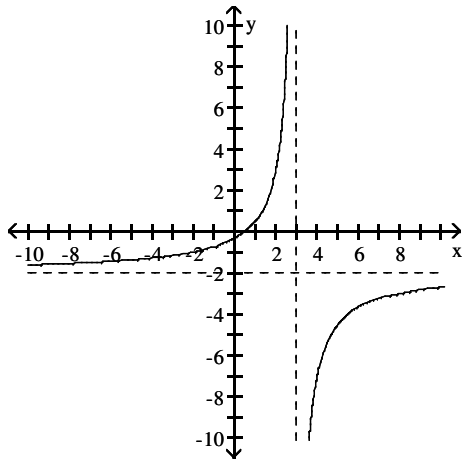


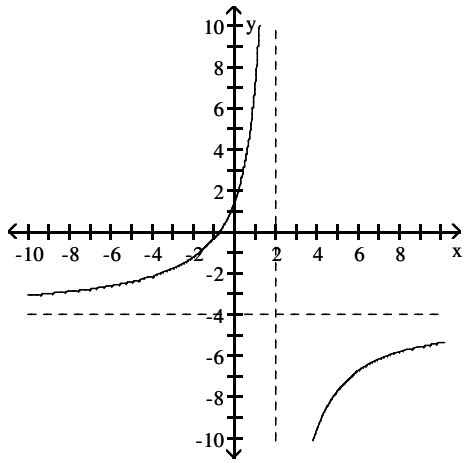
34) _____

35)



35) _____

36)



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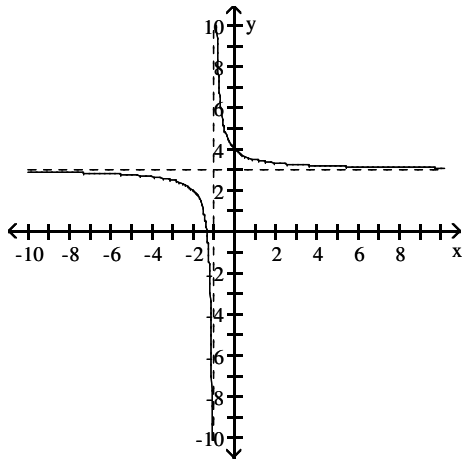
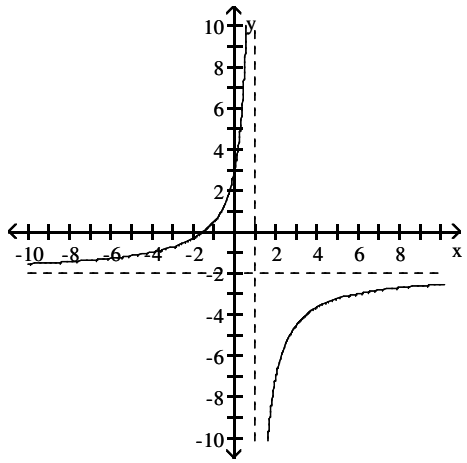


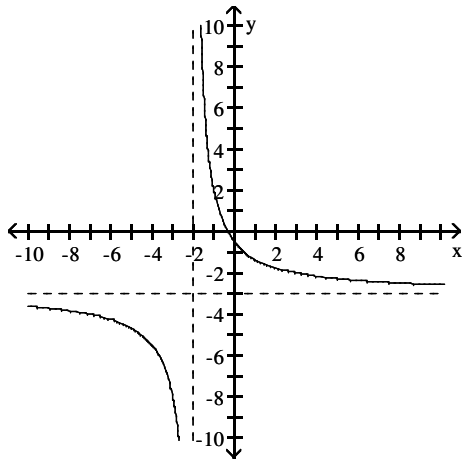
37) _____

38)

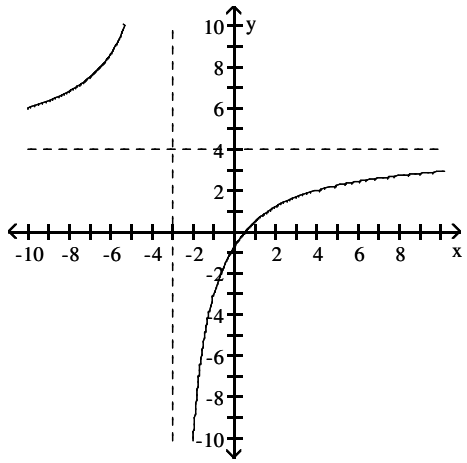


38) _____

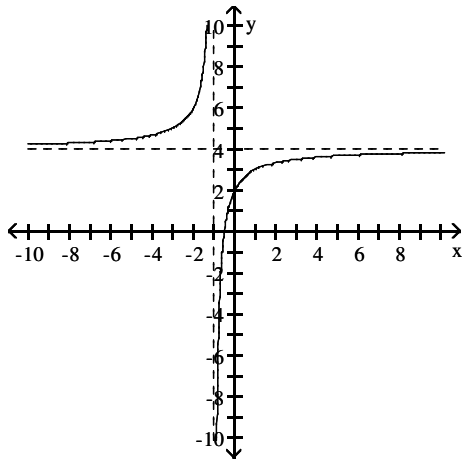
39)



39) _____

40) 

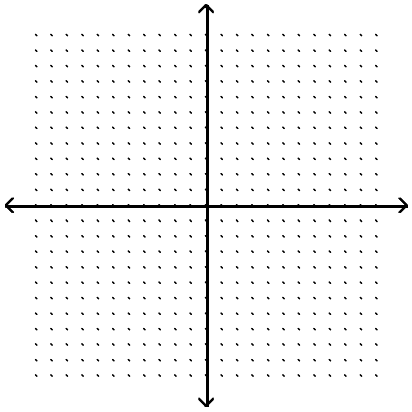
40) _____

41) 

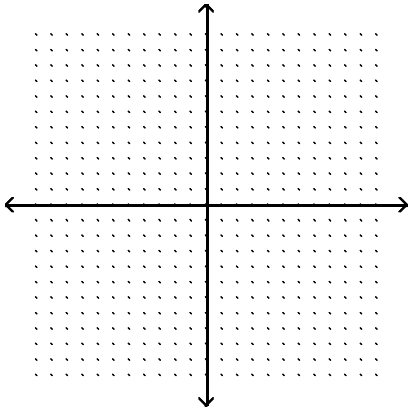
41) _____

Sketch the graph of the rational function.

42) $f(x) = \frac{x - 3}{x + 4}$ 42) _____

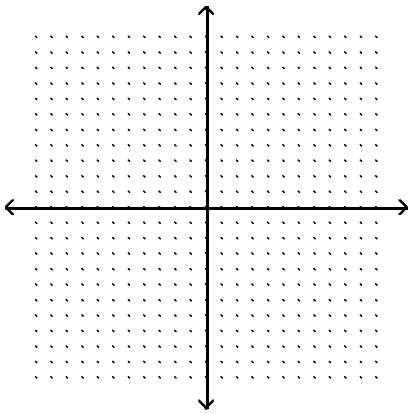


43) $f(x) = \frac{x - 4}{x + 5}$ 43) _____



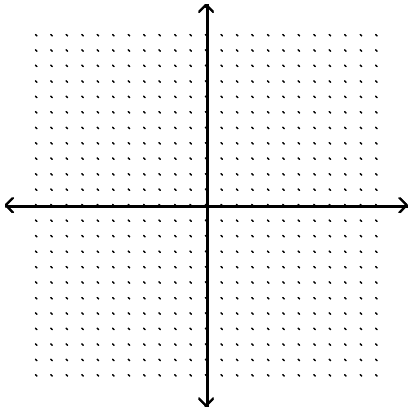
44) $f(x) = \frac{x - 2}{x + 3}$

44) _____



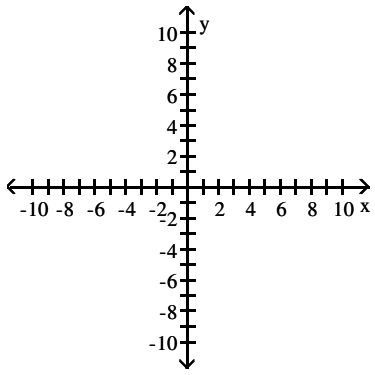
45) $f(x) = \frac{x - 2}{x + 3}$

45) _____

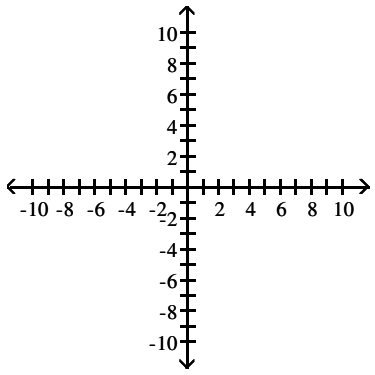


Graph the function.

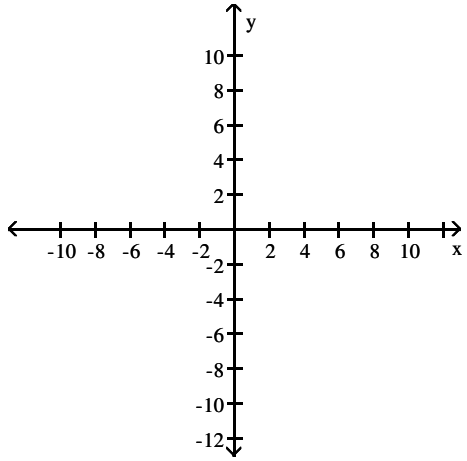
46) $f(x) = \dfrac{x + 3}{x^2 + 7x + 12}$ 46) _____



47) $f(x) = \dfrac{5x + 1}{x - 3}$ 47) _____

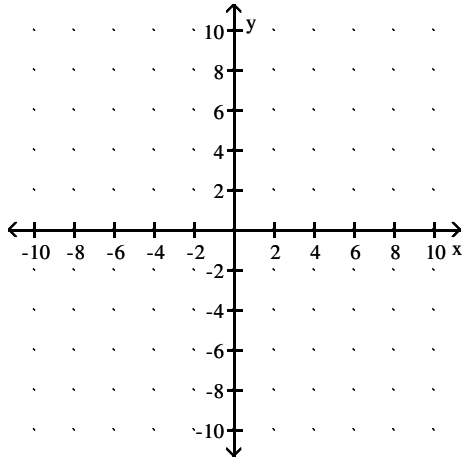


48) $f(x) = \dfrac{x^2 + x - 20}{x^2 - x - 30}$ 48) _____



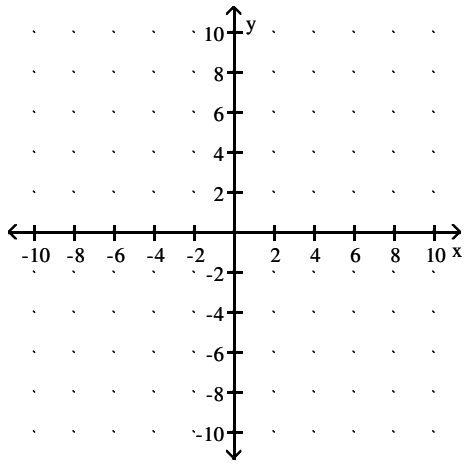
Graph the rational function and find the intercepts.

49) $f(x) = \dfrac{2x}{x - 4}$ 49) _____



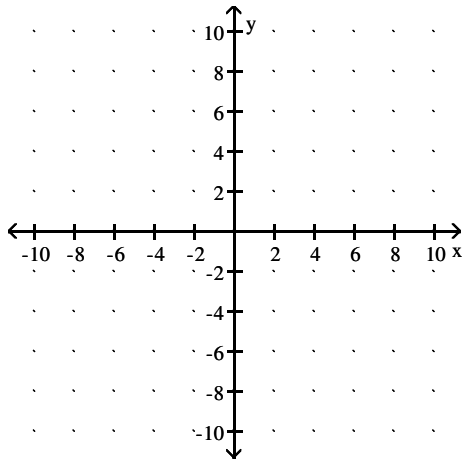
50) $f(x) = \frac{3x}{x - 2}$

50) _____



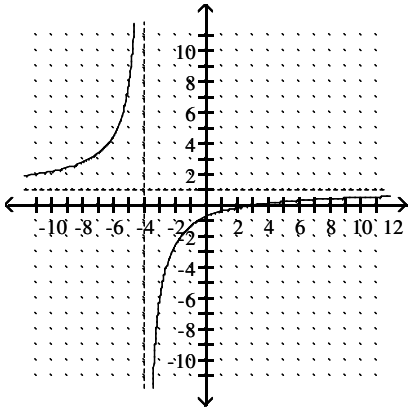
51) $f(x) = \frac{3x}{x - 1}$

51) _____



1) D = $(-\infty, \infty)$
2) D = $(-\infty, \infty)$
3) D = $(-\infty, \infty)$
4) D = $\{x \mid x \neq -8\}$
5) D = $\{x \mid x \neq -6\}$
6) D = $\{x \mid x \neq -2\}$
7) D = $\{w \mid w \neq 0\}$
8) D = $\{v \mid v \neq 0\}$
9) D = $\{v \mid v \neq 0\}$
10) D = $\{x \mid x \neq 9 \text{ and } x \neq -9\}$
11) D = $\{x \mid x \neq 4 \text{ and } x \neq -4\}$
12) D = $\{x \mid x \neq 9 \text{ and } x \neq -9\}$
13) D = $\{x \mid x \neq 5 \text{ and } x \neq 2\}$
14) D = $\{x \mid x \neq 3 \text{ and } x \neq 8\}$
15) D = $\{x \mid x \neq 9 \text{ and } x \neq 8\}$
16) $y = 1$
17) none
18) $y = 0$
19) $y = 4$
20) $y = 1$
21) $y = \frac{3}{5}$
22) $y = \frac{4}{3}$
23) $y = 2$
24) $x = 7$
25) $x = 5$
26) $x = \frac{1}{4}$
27) none
28) $x = 2, x = -2$
29) $x = 4, x = -4$
30) $x = 0, x = -4$
31) $x = 2, x = -2$
32) Vertical: $x = -4$; horizontal: $y = 2$; $(-\infty, -4) \cup (-4, \infty)$
33) Vertical: $x = 2$; horizontal: $y = 1$; $(-\infty, 2) \cup (2, \infty)$
34) Vertical: $x = 2$; horizontal: $y = 4$; $(-\infty, 2) \cup (2, \infty)$
35) Vertical: $x = 3$; horizontal: $y = -2$; $(-\infty, 3) \cup (3, \infty)$
36) Vertical: $x = 2$; horizontal: $y = -4$; $(-\infty, 2) \cup (2, \infty)$
37) Vertical: $x = -1$; horizontal: $y = 3$; $(-\infty, -1) \cup (-1, \infty)$
38) Vertical: $x = 1$; horizontal: $y = -2$; $(-\infty, 1) \cup (1, \infty)$
39) Vertical: $x = -2$; horizontal: $y = -3$; $(-\infty, -2) \cup (-2, \infty)$
40) Vertical: $x = -3$; horizontal: $y = 4$; $(-\infty, -3) \cup (-3, \infty)$
41) Vertical: $x = -1$; horizontal: $y = 4$; $(-\infty, -1) \cup (-1, \infty)$

42)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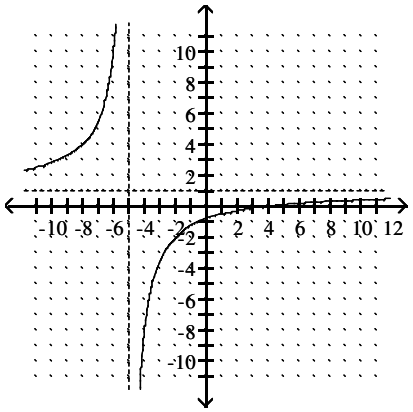
43)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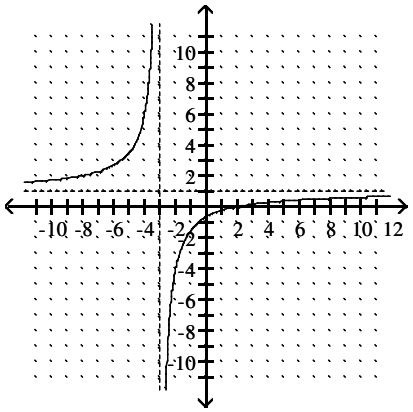
44)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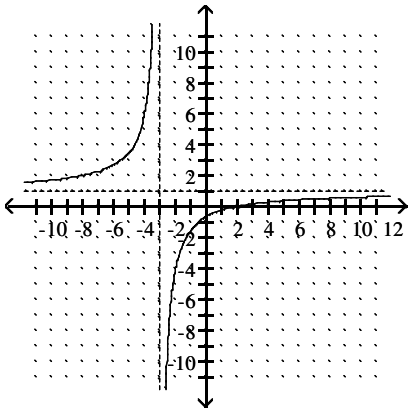
45)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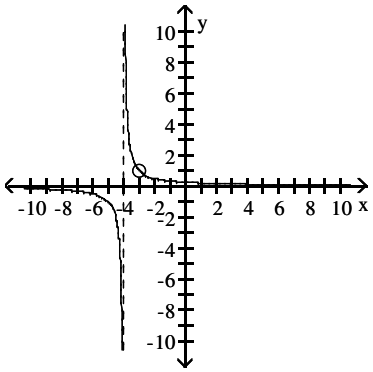
46)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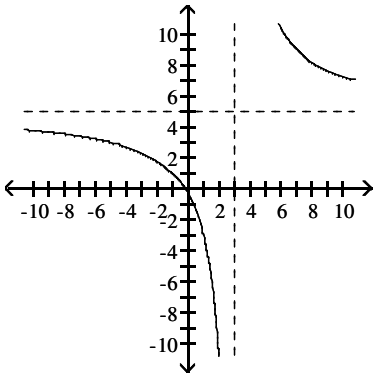
47)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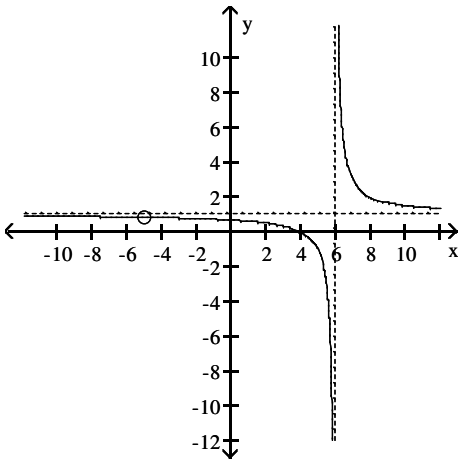
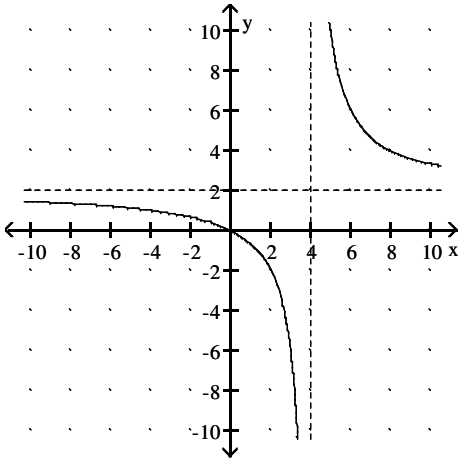
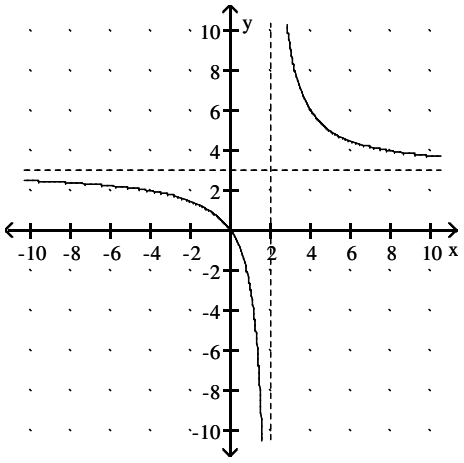
48)



49) x intercept: 0. y–intercept: 0.



50) x intercept: 0. y–intercept: 0.



51) x intercept: 0. y–intercept: 0.