Quiz 3 Preparation Ch 5.1, 5.2, 5.3, & 5.4 v01
There will be EIGHT questions chosen from below.
No Book/No Notes/No Ipod/No Phone/Yes Calculator 20 minutes
Summer 2012

Name_____

**Solve the problem.**

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

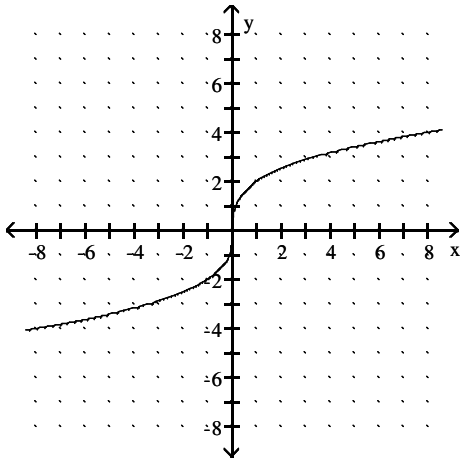
| x | f(x) |
|---|---|
| 1 | 21 |
| 2 | 17 |
| 3 | 13 |
| 4 | 9 |

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

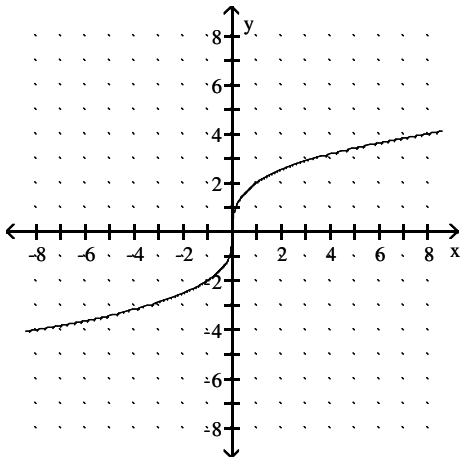
2) Let $f(x) = 3^x$.
   i) Find f(3).
   ii) Find $f^{-1}(3)$.
   iii) Find x when f(x) = 9.
   iv) Find x when $f^{-1}(x) = 9$.

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

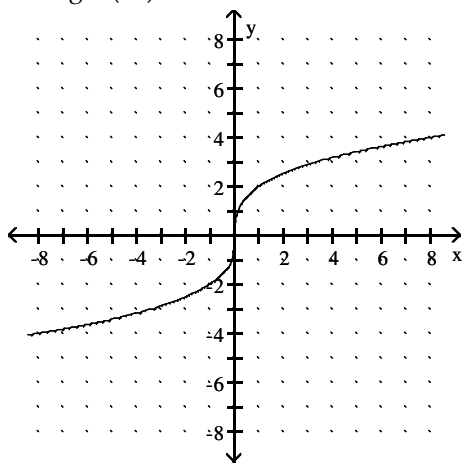
3) Find $g^{-1}(2)$



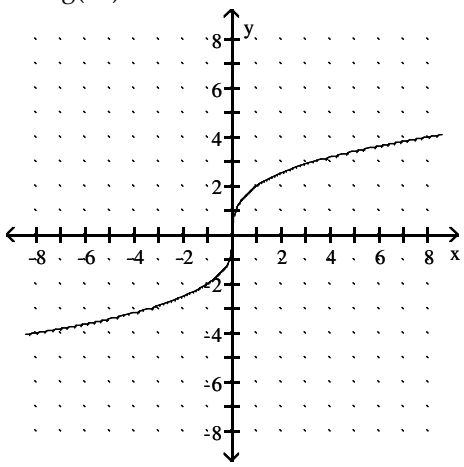

4) Find g(–8)



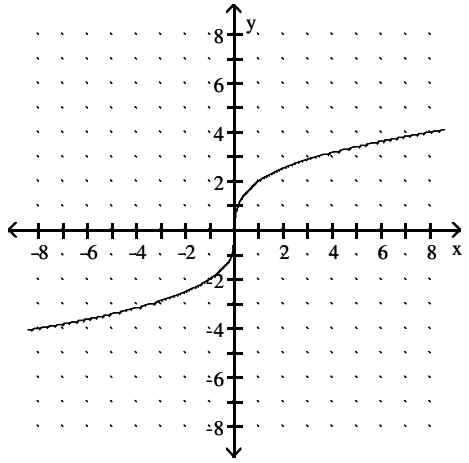
5) Find $g^{-1}(-2)$



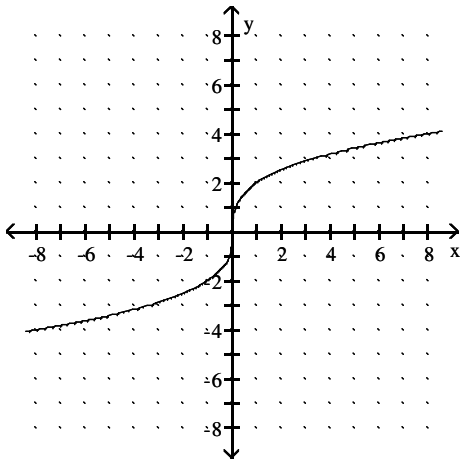

7) Find $g(-1)$




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

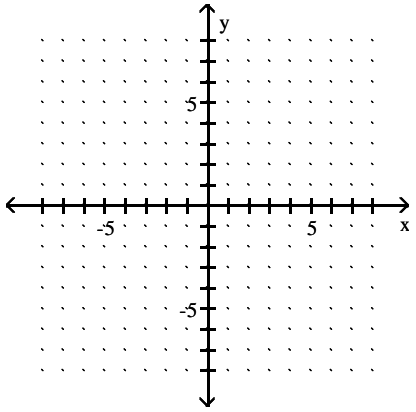



8) Find $g^{-1}(0)$

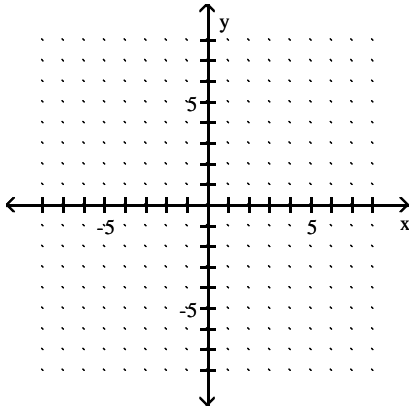


**Sketch the graph of the given function, its inverse, and y = x on the same set of axes. Graph the function with a solid line, and graph y = x and the function's inverse using dotted lines.**

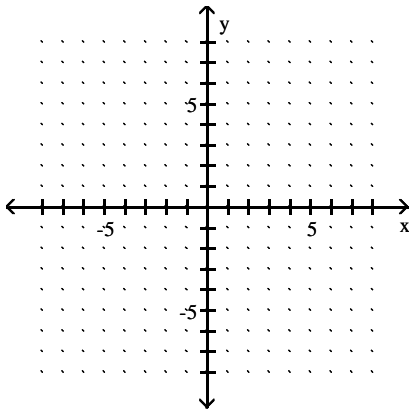
9) $f(x) = 4(3)^x$



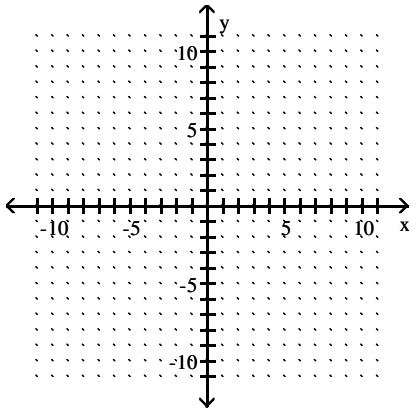

10) $f(x) = 2(8)^x$



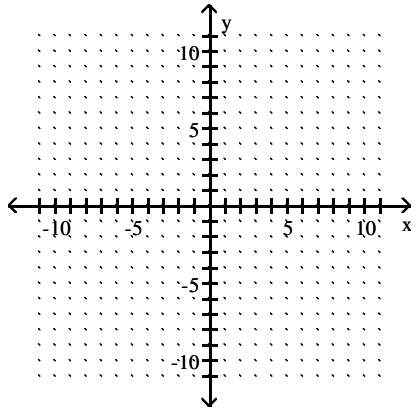

11) $f(x) = 2(7)^x$



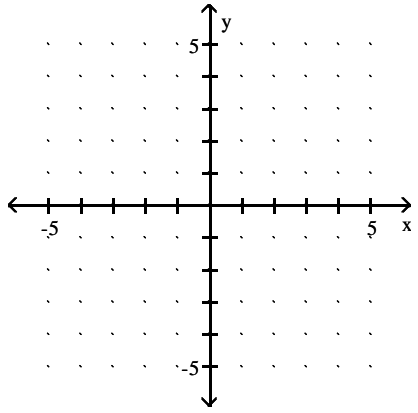

12) $f(x) = 3x$



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




14) $f(x) = 5(\frac{1}{6})^x$




**Find the inverse of the given function.**

15) $f(x) = x + 12$

16) $f(x) = x + 5$

17) $f(x) = -4x$

18) $f(x) = -3x$

19) $f(x) = -8x + 2$

20) $f(x) = 3x - 8$

21) $f(x) = \frac{7x - 1}{8}$

22) $f(x) = \frac{5x - 7}{3}$

23) $f(x) = 4(x - 8)$

24) $f(x) = 2(x - 5)$

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

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

**Find the logarithm.**

27) $\log_3(9)$

28) $\log_5(25)$

29) $\log(10{,}000)$

30) $\log(10)$

31) $\log_7(1)$

32) $\log_4(1)$

33) $\log_{12}(\sqrt{12})$

34) $\log_{7}(\sqrt{7})$

35) $\log_{8}(8)$

36) $\log_{7}(7)$

37) $\log_{2}(\frac{1}{4})$

38) $\log_{4}(\frac{1}{16})$

39) $\log_{8}(2)$

40) $\log_{25}(5)$

41) $\log_{2}(\log_{2}(16))$

42) $\log_{2}(\log_{2}(16))$

43) $\log_{b}(\sqrt{b})$

44) $\log_{b}(\sqrt{b})$

45) $\log_b(b)$

46) $\log_b(b)$

47) $\log_b(1)$

48) $\log_b(1)$

49) $\log_b\left(\frac{1}{b^6}\right)$

50) $\log_b\left(\frac{1}{b^4}\right)$

**Write the equation in exponential form. Assume that all constants are positive and not equal to 1.**

51) $\log_2(8) = 3$

52) $\log_8(2) = \frac{1}{3}$

53) $\log_2\left(\frac{1}{4}\right) = -2$

**Write the equation in logarithmic form. Assume that all constants are positive and not equal to 1.**

54) $6^3 = 216$

**Solve.**

55) $\log_3(x + 2) = -1$

**Solve. Round any approximate solution to the fourth decimal place.**

56) $5^x = 625$

57) $4^x = 16$

58) $3^{x+8} = 6$

59) $4^{x+6} = 3$

60) $4^{x+6} = 8$

61) $5^{x+8} = 2$

**Solve.**

62) $\log_2 (x + 2) = -1$

63) $\log_2 (2 - 2x) = 3$

64) $\log_2 (-6 - 5x) = 2$

65) $3\log_{216} (x) + 8 = 9$

66) $4\log_{256} (x) + 3 = 4$

67) $\log_{10} (x^2) = 4$

68) $\log_9 (x^2) = 4$

**Write the equation in logarithmic form. Assume that all constants are positive and not equal to 1.**

69) $e^z = y$

**Solve the problem.**

70) Jeff received a gift from his grandfather of $13,000, which he invested at an annually compounded interest rate of 4%. Let V = f(t) represent the value (in dollars)of the account after t years or any fraction thereafter. Find an equation for f. What will be the value of the investment in 16 years?

71) Jeff received a gift from his grandfather of $5000, which he invested at an annually compounded interest rate of 10%. Let V = f(t) represent the value (in dollars)of the account after t years or any fraction thereafter. Find an equation for f. What will be the value of the investment in 20 years?

72) Bianca borrowed $12,000 at a rate of 7% compounded annually. What was the total amount Bianca owed after 9 years?

73) Bianca borrowed $12,000 at a rate of 4% compounded annually. What was the total amount Bianca owed after 7 years?

1)

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

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

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

3) 1

4) –4

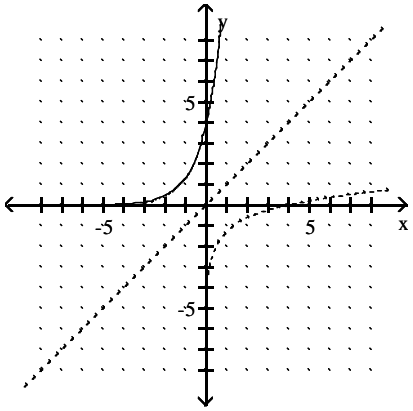
5) –1

6) –8

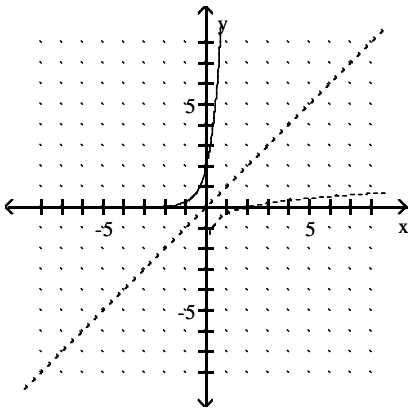
7) –2

8) 0

9)




10)



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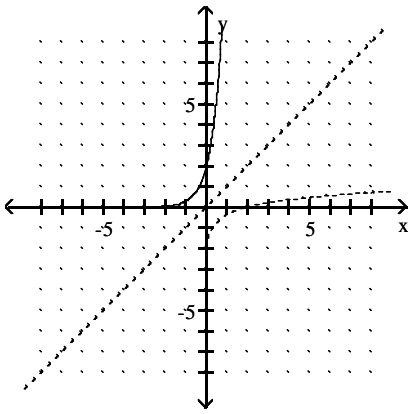
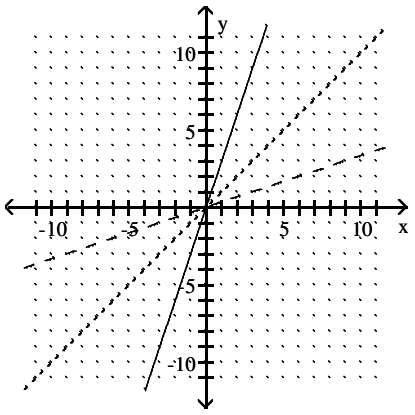
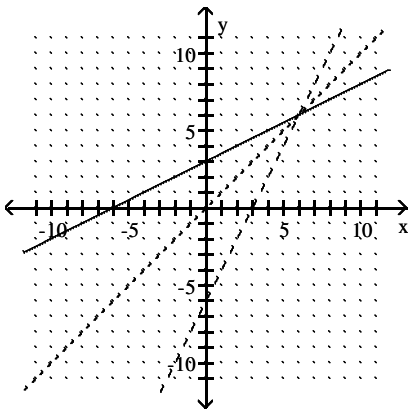


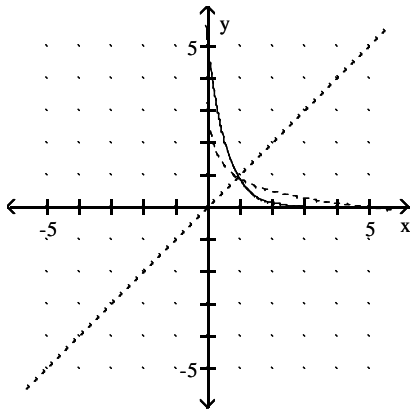

12)




13)



14)




15) $f^{-1}(x) = x - 12$

16) $f^{-1}(x) = x - 5$

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

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

19) $f^{-1}(x) = \frac{x - 2}{-8}$

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

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

22) $f^{-1}(x) = \frac{3x + 7}{5}$

23) $f^{-1}(x) = \frac{1}{4}x + 8$

24) $f^{-1}(x) = \frac{1}{2}x + 5$

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

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

27) 2

28) 2

29) 4

30) 1

31) 0

32) 0

33) $\frac{1}{2}$

34) $\frac{1}{2}$

35) 1

36) 1

37) –2

38) –2

39) $\frac{1}{3}$

40) $\frac{1}{2}$

41) 2

42) 2

43) $\frac{1}{2}$

44) $\frac{1}{2}$

45) 1

46) 1

47) 0

48) 0

49) –6

50) –4

51) $2^3 = 8$

52) $8^{1/3} = 2$

53) $2^{-2} = \frac{1}{4}$

54) $\log_6 (216) = 3$

55) $-\frac{5}{3}$

56) 4

57) 2

58) –6.3691

59) –5.2075

60) –4.5000

61) –7.5693

62) $-\frac{3}{2}$

63) –3

64) –2

65) 6

66) 4

67) 100, –100

68) 81, –81

69) $\log_e(y) = z$

70) $V = 13{,}000(1.04)^t$; \$24,348.76

71) $V = 5000(1.1)^t$; \$33,637.50

72) \$22,061.51

73) \$15,791.18