Math 098 Worksheet 8.2B_GraphingFunctionWithTheInverse_v01
NO BOOK/ NO NOTES/YES CALCUATOR
Fall 2017 Dressler

Name_____

Determine if the function is one–to–one. Explain your answer.

1) $f(x) = 7x + 7$

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

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

4) $f(x) = x^3 - 7$

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

6) $f(x) = x^2 + 6$

7) $f(x) = -(x - 6)^2$

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

9) $f(x) = |x + 3|$

10) $f(x) = |x + 4|$

11) $h(x) = \frac{x - 8}{5}$

12) $h(x) = \frac{x - 9}{9}$

13) $f(x) = 5$

14) $f(x) = 10$

15) $f(x) = 5x + 9$

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

Find the inverse of the one–to–one function. Then, verify that $(f \circ f^{-1})(x) = x$, $(f^{-1} \circ f)(x) = x$, $D_f = R_{f^{-1}}$, and $R_f = D_{f^{-1}}$.

17) $f(x) = 4x + 3$

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

19) $f(x) = (x - 5)^3$

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

21) $g(x) = x^3 - 12$

22) $g(x) = x^3 - 9$

23) $f(x) = \sqrt{x + 2}$

24) $f(x) = \sqrt{x + 3}$

25) $h(x) = \frac{6 - x}{6}$

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

27) $g(x) = \frac{7}{x}$

28) $g(x) = \frac{6}{x}$

29) $f(x) = \sqrt[3]{x + 8}$

30) $f(x) = \sqrt[3]{x + 5}$

31) $g(x) = \frac{1 - x}{6x}$

32) $g(x) = x^3 + 4$

33) $f(x) = \sqrt{x + 9}$

34) $g(x) = \frac{11}{x}$

Determine if the functions are inverses of each other.

35) $f(x) = 5x$, $g(x) = \frac{x}{5}$

36) $f(x) = 4x$, $g(x) = \frac{x}{4}$

37) $f(x) = x - 5$, $g(x) = x + 5$

38) $f(x) = x - 3$, $g(x) = x + 3$

39) $f(x) = 5x + 9$, $g(x) = \frac{x - 9}{5}$

40) $f(x) = 2x + 2$, $g(x) = \frac{x - 2}{2}$

41) $f(x) = 5x + 9$, $g(x) = 9 - 5x$

42) $f(x) = 6x + 4$, $g(x) = 4 - 6x$

43) $f(x) = x^3 + 2$, $g(x) = \sqrt[3]{x - 2}$

44) $f(x) = x^3 + 8$, $g(x) = \sqrt[3]{x - 8}$

45) $f(x) = x^5 + 3$, $g(x) = \sqrt[5]{x} - 3$

46) $f(x) = x^5 + 9$, $g(x) = \sqrt[5]{x} - 9$

47) $f(x) = 6x$, $g(x) = \frac{x}{6}$

48) $f(x) = 2x + 3$, $g(x) = \frac{x - 3}{2}$

49) $f(x) = 5x + 4$, $g(x) = 4 - 5x$

50) $f(x) = 5x + 6$, $g(x) = \frac{x - 6}{5}$

51) $f(x) = 8x$, $g(x) = \frac{x}{8}$

52) $f(x) = 7x + 4$, $g(x) = 4 - 7x$

Solve the application.

53) When Miguel converted his Mexican pesos to U.S. dollars, the conversion function was represented by f(x) = 13.4x, where x represented the number of U.S. dollars. Find the inverse function f^{-1} and explain the meaning of the variables.

54) When Miguel converted his Mexican pesos to U.S. dollars, the conversion function was represented by f(x) = 13.2x, where x represented the number of U.S. dollars. Find the inverse function f^{-1} and explain the meaning of the variables.

55) When Pierre converted his Euros to British pounds, the conversion function was represented by f(x) = 1.13x, where x represented the number of British pounds. By finding the inverse function, determine how many British pounds Pierre received if he converted 1695 Euros. Round to the nearest pound, if necessary.

56) When Pierre converted his Euros to British pounds, the conversion function was represented by f(x) = 1.13x, where x represented the number of British pounds. By finding the inverse function, determine how many British pounds Pierre received if he converted 1808 Euros. Round to the nearest pound, if necessary.

57) Sandra earns a weekly salary of $600 plus 4% on her total sales. If x represents the total dollar amount of her sales for one week, then f(x) = 600 + 0.04x represents her weekly salary. Find the inverse function and explain the meaning of the variables.

58) Sandra earns a weekly salary of $650 plus 7% on her total sales. If x represents the total dollar amount of her sales for one week, then f(x) = 650 + 0.07x represents her weekly salary. Find the inverse function and explain the meaning of the variables.

59) Derek earns a weekly salary of $600 plus 5% on his total sales. If x represents the total dollar amount of his sales for one week, then f(x) = 600 + 0.05x represents his weekly salary. By finding the inverse function, determine Derek's total sales the week his salary was $ 950.

60) Derek earns a weekly salary of $500 plus 7% on his total sales. If x represents the total dollar amount of his sales for one week, then f(x) = 500 + 0.07x represents his weekly salary. By finding the inverse function, determine Derek's total sales the week his salary was $ 1130.

1) One–to–one, passes the horizontal line test
2) One–to–one, passes the horizontal line test
3) One–to–one, passes the horizontal line test
4) One–to–one, passes the horizontal line test
5) Not one–to–one, fails the horizontal line test
6) Not one–to–one, fails the horizontal line test
7) Not one–to–one, fails the horizontal line test
8) Not one–to–one, fails the horizontal line test
9) Not one–to–one, fails the horizontal line test
10) Not one–to–one, fails the horizontal line test
11) One–to–one, passes the horizontal line test
12) One–to–one, passes the horizontal line test
13) Not one–to–one, fails the horizontal line test
14) Not one–to–one, fails the horizontal line test
15) One–to–one, passes the horizontal line test
16) Not one–to–one, fails the horizontal line test
17) $f^{-1}(x) = \frac{x - 3}{4}$
18) $f^{-1}(x) = \frac{x - 5}{5}$
19) $f^{-1}(x) = \sqrt[3]{x} + 5$
20) $f^{-1}(x) = \sqrt[3]{x} - 6$
21) $g^{-1}(x) = \sqrt[3]{x + 12}$
22) $g^{-1}(x) = \sqrt[3]{x + 9}$
23) $f^{-1}(x) = x^2 - 2, x \geq 0$
24) $f^{-1}(x) = x^2 - 3, x \geq 0$
25) $h^{-1}(x) = -6x + 6$
26) $h^{-1}(x) = -5x + 5$
27) $g^{-1}(x) = \frac{7}{x}, x \neq 0$
28) $g^{-1}(x) = \frac{6}{x}, x \neq 0$
29) $f^{-1}(x) = x^3 - 8$
30) $f^{-1}(x) = x^3 - 5$
31) $g^{-1}(x) = \frac{1}{6x + 1}, x \neq -\frac{1}{6}$
32) $g^{-1}(x) = \sqrt[3]{x - 4}$
33) $f^{-1}(x) = x^2 - 9, x \geq 0$
34) $g^{-1}(x) = \frac{11}{x}, x \neq 0$
35) Yes
36) Yes
37) Yes
38) Yes

39) Yes
40) Yes
41) No
42) No
43) Yes
44) Yes
45) No
46) No
47) Yes
48) Yes
49) No
50) Yes
51) Yes
52) No
53) $f^{-1}(x) = \frac{x}{13.4}$; x represents the number of pesos, $f^{-1}(x)$ represents the number of U.S. dollars.
54) $f^{-1}(x) = \frac{x}{13.2}$; x represents the number of pesos, $f^{-1}(x)$ represents the number of U.S. dollars.
55) 1500 pounds
56) 1600 pounds
57) $f^{-1}(x) = \frac{x - 600}{0.04}$, where x represents her weekly salary and $f^{-1}(x)$ represents her total sales.
58) $f^{-1}(x) = \frac{x - 650}{0.07}$, where x represents her weekly salary and $f^{-1}(x)$ represents her total sales.
59) $7000
60) $9000