

unit key

Unit 4

April 20, 2018

1 Answers

1. $9x-5 \neq 5x-9$ Not inverses

2. $x=x$ inverses

$$3. \begin{aligned} y_1 &= \sqrt[3]{x-4} \\ y_2 &= x^3+4 \end{aligned}$$

Graph, symmetrical about the origin, therefore inverses

4. $x=x$ inverses

$$5. \begin{aligned} \text{inverse: } f^{-1}(x) &= \sqrt[3]{x-2} \\ f(x) \text{ domain: } &(-\infty, \infty) \quad \text{Range: } (2, \infty) \\ f^{-1}(x) \text{ domain: } &(2, \infty) \quad \text{Range: } (-\infty, \infty) \end{aligned}$$

$$6. \begin{aligned} f^{-1}(x) &= 7/(x+3) \\ f(x) \text{ domain: } &(-\infty, 0) \cap (0, \infty) \quad \text{Range: } (-\infty, -3) \cup (-3, \infty) \\ f^{-1}(x) \text{ domain: } &(-\infty, -3) \cup (-3, \infty) \quad \text{Range: } (-\infty, 0) \cap (0, \infty) \end{aligned}$$

$$7. \begin{aligned} f^{-1}(x) &= -(x+3)/(x-2) \\ f(x) \text{ domain: } &(-\infty, -1) \cap (-1, \infty) \quad \text{Range: } (-\infty, 2) \cup (2, \infty) \\ f^{-1}(x) \text{ domain: } &(-\infty, 2) \cup (2, \infty) \quad \text{Range: } (-\infty, -1) \cap (-1, \infty) \end{aligned}$$

$$8. x = -3$$

$$9. x = 1/2 \quad x = -3/2$$

$$10. x = 4/15$$

$$11. x = 2/3$$

$$12. a) \$9479.19 \quad b) \$9527.70 \quad c) \$9560.92 \quad d) \$9577.70$$

$$13. a) \$13,538.38 \quad b) \$13,515.60 \quad c) \$13,426.42 \quad d) \$13,426.42 \quad \text{option A yields the}$$

greatest

14. 157; 100 Chernobyl will not be safe for human habitation in 2066

15. $y = 3$

16. $b = 3$

17. $x = 2$

18. $x = 7$

19. $x = 7$

20. $x = -6$

21. $1 - \log_7(x)$

22. $2 - 1/2 \log_8(x+1)$

23. $3 - \log_5(y)$

24. $1/2 + 1/2 \ln(x)$

25. $\log_b(x^5 y^6)$

26. $\ln(x^2/\sqrt{y})$

27. $\log(\sqrt{7x}) - \log(\sqrt{14y})$

28. $\ln(\sqrt[3]{(x+6)^5} / \sqrt[3]{x^3 + 25x})$

29. $x = 5/4$

30. $x = 6$

31. $x = 5$

32. $x = 9$

33. a) 37.3 million b) 38.02 million c) 2083 d) 2510

34. a) 118 ft b) 64 ft c) 12%

35. 1) 146.08 2) 334.66 3) 0.0088 4) .017 5) - 0.0038 6) 0.00684

36. 1) 12.6 years 2) 11.0 years 3) .1428%/year 4) .0152%/year 5) 3.96\$/day 6) .6314%/hr

37. $(-2, 3)$

38. $(-2, 1)$

39. $(-1, -2)$

40. $(-4, 4)$

41. $(-6, -2)$

42. $(32/7, -20/7)$

43. $(-1, -1)$

44. *no solution*

45. *no solution*