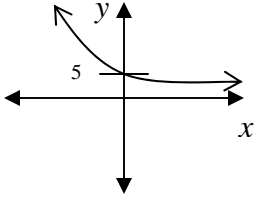


Functions, Statistics, and Trigonometry First Semester Final Exam Review Key

1. a. D: all real #'s except 0
R: all real #'s except 0
b. yes, passes the vertical line test.

2. a. 14.5 b. 14.5 c. 2.5

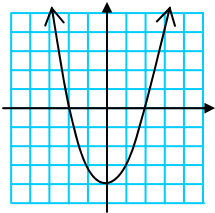
3. a.



- b. decay

4. a. 48 b. 4 and -12
c. (-4, 64) d. maximum

- 5.

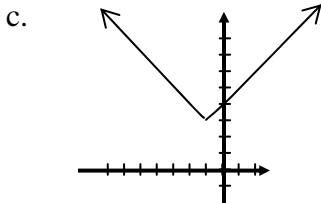


6. -7

7. D

8. a. $y = (x+7)^3 - 1$
b. Moves left 7 and down 1

9. a. $p(x) = |x|$
b. $T(x, y) \rightarrow (x-1, y+3)$



10. (-3, 1)

11. $S(x, y) \rightarrow \left(\frac{x}{2}, \frac{y}{3}\right)$

12. $f(x) = \frac{1}{5}\left(\frac{3}{x}\right)$

13. A

14. Substitute -x for x:

$$f(-x) = 6(-x)^5 + 7(-x)^3 - (-x)$$

$$f(-x) = -6x^5 - 7x^3 + x$$

$$f(-x) = -(6x^5 + 7x^3 - x)$$

$$f(-x) = -f(x)$$

therefore, f(x) is odd

15. Line symmetry with line of symmetry the x-axis.

16. a. $3\sqrt{3}$

b. $38 - 2\sqrt{13}$

c. $(f \circ g)(x) = \sqrt{43 - 2x}$

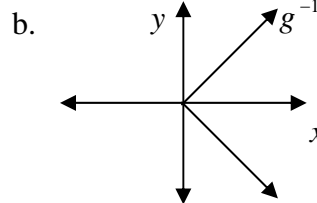
d. $D: x \leq 21.5$

17. a. 11

b. $g(f(x)) = 3x^2 - 1$

18. ii and iv

19. a. $p(x) = |x|$



- c. no, original does not pass horizontal line test
or inverse does not pass vertical line test.

20. B

21. a. $y^{-1} = \frac{1}{x-2}$

- b. yes, the original and the inverse are both linear functions.

22. $\frac{3}{4}$

23. $\frac{1}{27}$

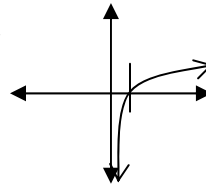
24. $5x^5$

25. $a^{1/3}b^{2/3}$

26. $\sqrt[5]{mn^3}$

27. B

- 28.



29. 4

30. 4

31. 2

32. 2.5440

33. 2.1978

34. a. min: -6 max: N/A
 b. rel. min.: -6 and -4 ;
 rel. max.: -1
 c. -8 and 8
 d. $-4 < x < -1$; $x > 4$
 e. $x < -4$; $-1 < x < 4$
 f. $x < -8$; $x > 8$
 g. $-8 < x < 8$
 h. -2

35. $q(x) = x^3 - 4x^2 + 2x - 3$
 $r(x) = 7$

36. $q(x) = 2x^3 + x^2 + 2x + 2$
 $r(x) = 14$

37. $-\frac{3}{4} \pm \frac{\sqrt{55}}{4}i$

38. $(3p + 5q)(9p^2 - 15pq + 25q^2)$

39. $(x + 2)(x - 2)(x - 7)$

40. $(5x - 2)(2x - 7)$

41. $g(m) = (m - 5)(m + 3)(2m + 5)$

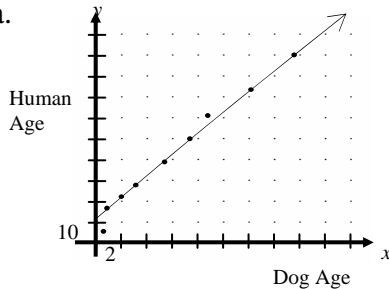
42. a. D: $x = 4, 6, -4, -1$

b. R: $y = -1, 1, 0$

c. true d. true

43. a. $r = 0.55$ b. ii

44. a.



b. $y = 6x + 8$

c. 116 d. $(6.17, 42.67)$

e. $42.67 = 5.29(6.17) + 10.03$

45. a. $y = 1.04x + 1.23$

b. \$31.39 thousand; interpolation

c. \$6.59 thousand; error = 0.81

46. a. $p = 3500(1.051)^n$

b. 11,549 people

47. a. $a = 200(.73)^d$

b. 2.20 days

48. a. $h = -4.9t^2 + 18t + 1.5$

b. 3.75 seconds

49. $y = .18x^2 - 3.54x + 272.99$

50. D

51. \$8671.14

52. 3.45 days

53. $\log_3 \left(\frac{b^{3/2}}{c^4} \right)$

54. $\ln(x^7 w^{12})$

55. $x = .71$

56. $x = 1.86$

57. $x = 1875$

58. $x = 173.5$

59. $x = 7$

60. C

61. 11 years, 6 months

62. $g(x) = x^3 - x^2 - 2x - 3$

63. a. $3i$

b. $-3 - i$

c. $-\frac{3}{10} - \frac{9i}{10}$

64. $y = k(x + 8)(4x + 3)(5x - 1)(x - 2)$

65. $y = (x - 6)^2(x + 1)(5x + 3)^3$

66. D

67. $-\frac{33}{50} - \frac{19i}{50}$

68. $x = -3, 2 \pm i$

69. $x = \frac{1}{3}$ multiplicity 2, $\pm i\sqrt{2}$

70. a. 0

b. 4