

Math 0250 Final Review Key

1.  $12\sqrt{2}$

2.  $3i\sqrt{3}$

3.  $4+i$

4.  $55+ -48i$

5.  $69+ -13i$

6. 29

7. Rate of the truck is 72 mph and the rate of the car is 80 mph.

8. He should invest \$10,000 at 4% and \$5,000 at 3%.

9. Hamburgers cost \$6 each and hot dogs cost \$3.75 each.

10. The perimeter of the garden is 160 feet.

11. The perimeter of the original square is 8 inches.

12a.  $-\frac{3}{2}$  or  $-1$

12b. The Domain is  $\left(-\infty, -\frac{3}{2}\right) \cup \left(-\frac{3}{2}, -1\right) \cup (-1, \infty)$  written in interval notation or  $\left\{x \mid x \neq -\frac{3}{2}, -1\right\}$  written in set-builder notation.

13.  $f(x)$  is pronounced "f of x".  $f$  is the name of the function where  $x$  is the variable representing the domain.  $f(x)$  is another name for the dependent variable  $y$ .

14. 72

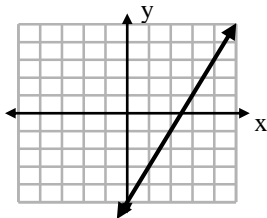
15a.  $-10$

15b.  $a^2 + 8a + 2$

16.  $f^{-1}(x) = \sqrt[3]{x} + 3$

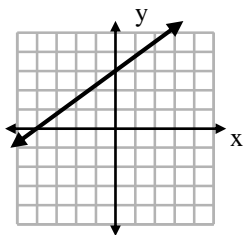
17.  $f^{-1}(x) = \frac{9x^2}{4}, \quad x \geq 0$

18.

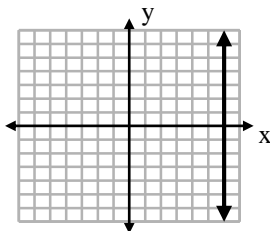


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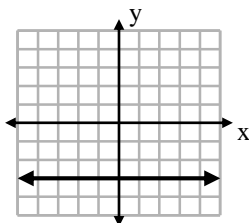
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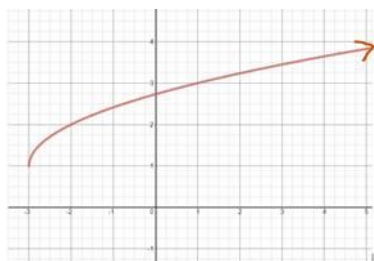
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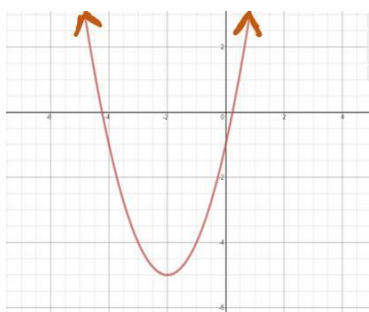
21.



22. Domain:  $[-3, \infty)$  , Range:  $[1, \infty)$



23. Domain:  $(-\infty, \infty)$  , Range:  $[-5, \infty)$

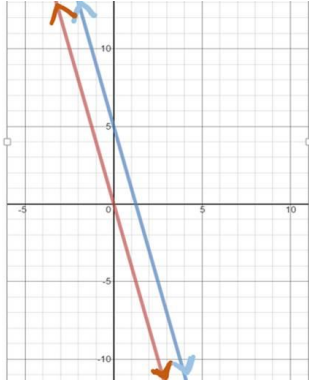


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24. Slope-Intercept form  $y = -\frac{7}{3}x - \frac{5}{3}$ , Standard form  $7x + 3y = -5$

25. Point-Slope form  $y - 1 = -\frac{2}{3}(x - 3)$ , Standard form  $2x + 3y = 9$

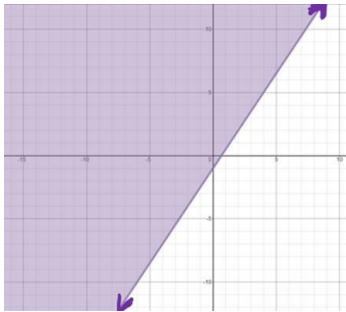
26. No solution,  $\emptyset$ , inconsistent system



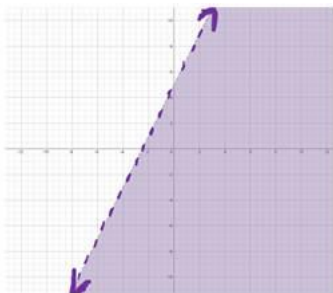
27.  $\left(\frac{1}{2}, \frac{3}{2}\right)$

28.  $\left(-1, \frac{3}{2}\right)$

29.



30.



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31.  $-\frac{10}{81}x^8$

32.  $\frac{-x-9}{(x+3)(x+2)}$

33.  $4a^2 - 28ab + 49b^2$

34.  $\frac{15a}{4}$

35.  $2(5-3t)(25+15t+9t^2)$

36.  $5n(5n+4)$

37.  $\frac{2}{3}$  or  $-4$

38.  $0, 5,$  or  $-3$

39.  $\frac{1}{8}, \frac{1}{2}$

40.  $\frac{-7 \pm \sqrt{53}}{2}$

41.  $2, -2, 3,$  or  $-3$

42.  $\frac{2 \pm \sqrt{22}}{3}$

43.  $2$  or  $-\frac{2}{3}$

44.  $5 \pm 2\sqrt{6}$

45.  $\frac{3 \pm \sqrt{65}}{4}$

46.  $\pm \frac{7}{2}i$

47.  $1 \pm 5\sqrt{2}i$

48.  $\frac{3}{2} \pm \frac{1}{2}i$

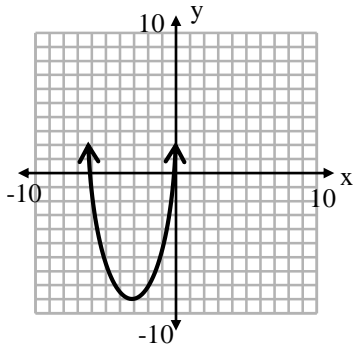
49.  $(-5, -2)$

50.  $(-\infty, -6] \cup [-3, \infty)$

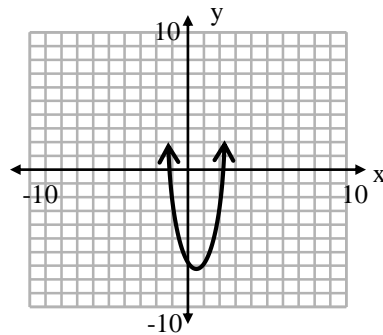
51.  $\left(-\infty, -\frac{11}{2}\right] \cup [4, \infty)$

52.  $\left(-8, \frac{16}{3}\right)$

53. vertex  $(-3, -9)$ , x-intercepts  $(0, 0)$  and  $(-6, 0)$ , y-intercept  $(0, 0)$ , and axis of symmetry  $x = -3$



54. vertex  $\left(\frac{3}{4}, -\frac{57}{8}\right)$ , x-intercepts  $\left(\frac{3+\sqrt{57}}{4}, 0\right)$  and  $\left(\frac{3-\sqrt{57}}{4}, 0\right)$ , y-intercept  $(0, -6)$ , and axis of symmetry  $x = \frac{3}{4}$



55.  $-\frac{10}{3}$  or  $-\frac{1}{2}$

56. 0 or 3

57. 3

58. -1

59.  $\frac{21}{2}$

60. 0 or 16

61.  $\frac{11t^4}{u^5} \sqrt{\frac{2t}{u}}$  then  $\frac{11t^4}{u^6} \sqrt{2tu}$  once the denominator is rationalized

62.  $\frac{-3}{2x}$

63.  $\frac{k+1}{2}$

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64.  $\frac{y-x}{2}$

65.  $\frac{x}{2-5x}$

66.  $\frac{1}{4}$

67. 1.77

68. 2.64

69. -1

70.  $\log_2(5x)$

71.  $\ln\left(\frac{x^5}{y}\right)$

72.  $3\log_3 a + \log_3 b$

73.  $1 - \ln 3$

74. 7

75.  $\frac{1}{1000}$

76a. 1.792

75b. 0.699

75c. 1.856

75d. 3.052

77. The ship is 62.3 miles from port.

78.  $b \approx 15.9\text{cm}$ ,  $A \approx 20.7^\circ$ ,  $B \approx 69.3^\circ$ ,  $C = 90^\circ$

79. 20.3 inches

80. The tree is approximately 85.8 feet tall.