

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

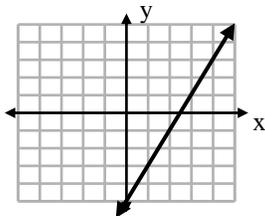
15a. -10

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

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

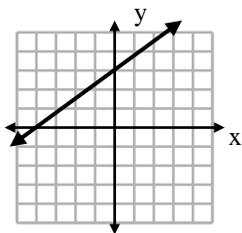
17. $f^{-1}(x) = \frac{9x^2}{4}, x \leq 0$

18.

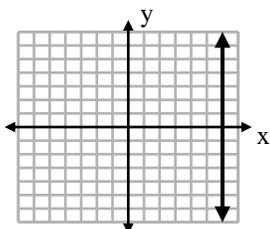


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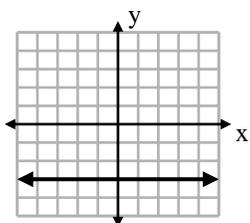
19.



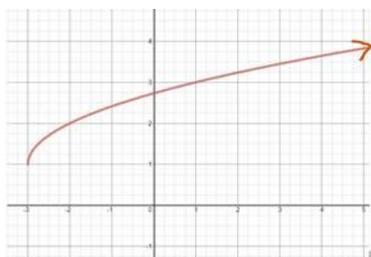
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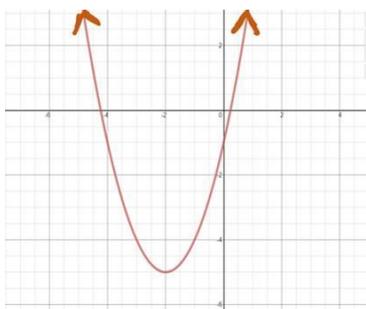
21.



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



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

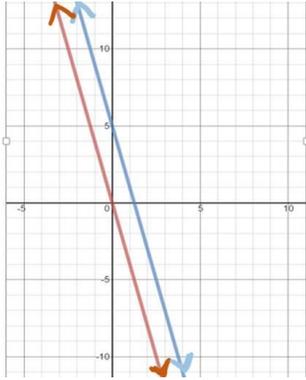


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24. Slope-Intercept form $y = -\frac{7}{3}x - \frac{5}{3}$, Standard form $7x + 3y = -5$

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

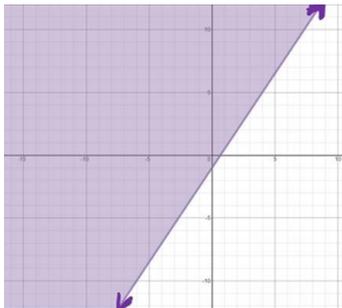
26. No solution, \emptyset , inconsistent system



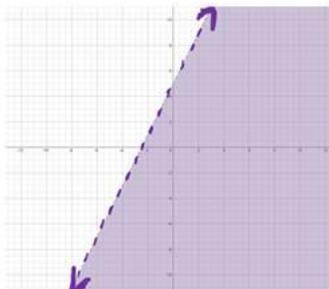
27. $\left(\frac{1}{2}, \frac{3}{2}\right)$

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

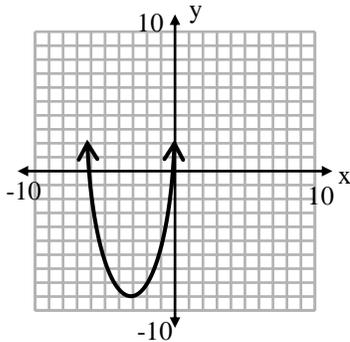
49. $(-5, -2)$

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

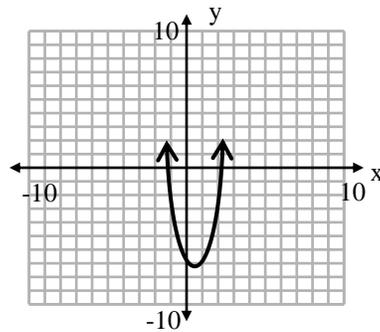
51. $\left(-\infty, -\frac{11}{2}\right] \cup [4, \infty)$

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.