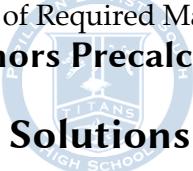


Papillion La-Vista South High School
 Practice Set of Required Math Skills for
Honors Precalculus



1.1 Rectangular Coordinates

Pythagorean Theorem: $a^2 + b^2 = c^2$

Distance Formula: $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

Midpoint Formula: $\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$

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

2. $\sqrt{202}$

3. $11^2 + 9^2 = c^2 \quad c = \sqrt{202}$

4. $\overline{AB} = \sqrt{5}, \quad \overline{BC} = \sqrt{45}, \quad \overline{AC} = \sqrt{50}$

$$\sqrt{5}^2 + \sqrt{45}^2 = \sqrt{50}^2 \quad \checkmark \text{ Yes}$$

5. Midpoint of (b, c) and $(a, 0)$: $\left(\frac{a+b}{2}, \frac{c}{2} \right)$

Midpoint of $(0, 0)$ and $(a+b, c)$: $\left(\frac{a+b}{2}, \frac{c}{2} \right)$

\checkmark Midpoints are the same.

6. c

7. a

8. b

9. d

1.2 Graphs of Equations

How to find x -intercepts: Substitute $y = 0$

How to find y -intercepts: Substitute $x = 0$

Standard form of circle: $(x - h)^2 + (y - k)^2 = r^2$

10. a) yes b) yes

11. a) yes b) no

12. a) no b) yes

13. a) yes b) no

14. $x\text{-int: } \left(\frac{6}{5}, 0 \right) \quad y\text{-int: } (0, -6)$

15. $x\text{-int: } (4, 0) \quad y\text{-int: } (0, 2)$

16. $x\text{-int: } (0, 0) \text{ and } (2, 0) \quad y\text{-int: } (0, 0)$

17. $x\text{-int: } (4, 0) \text{ and } (-4, 0) \quad y\text{-int: } (0, -16)$

18. $(x - 2)^2 + (y + 1)^2 = 16$

19. $x^2 + y^2 = 17$

1.3 Linear Equations in Two Variables

Slope-Intercept Form: $y = mx + b$

Point-Slope Form: $y - y_1 = m(x - x_1)$

Equation of vertical line: $x = a$

Equation of horizontal line: $y = a$

Define slope: rise over run

Equation for slope through 2 points: $m = \frac{y_2 - y_1}{x_2 - x_1}$

Parallel lines: same slope

Perpendicular lines: opposite reciprocal slopes

20. $m = -\frac{7}{6} \quad y\text{-int: } (0, 5)$

21. $m = \text{undefined} \quad y\text{-int: none}$

22. $m = 0 \quad y\text{-int: } (0, -4)$

23. $m = \frac{2}{3} \quad y\text{-int: } (0, -3)$

24. $y = -\frac{3}{5}x + 2$

25. $x = -8$

26. $y = -\frac{3}{25}x + \frac{159}{100}$

27. $y = 0.6$

28. a) $y = 2x - 3$ b) $y = -\frac{1}{2}x + 2$

29. a) $y = -\frac{3}{4}x + \frac{3}{8}$ b) $y = \frac{4}{3}x + \frac{127}{72}$

30. a) $x = 2$ b) $y = 5$

31. B

32. C

33. A

34. D

35. $W = 0.75x + 11.50$

1.4 Functions

Domain represents: all possible x -values

Domain represents: all possible y -values

Function: Each input has one output

36. yes

37. no

38. no

39. yes

40. a) -1 b) -9 c) $2x - 5$

41. a) 2 b) 5 c) $\sqrt{x} + 2$

42. a) $-\frac{1}{9}$ b) *undefined* c) $\frac{1}{y^2 + 6y}$

43. a) 0 b) -0.75 c) $x^2 + 2x$

44. a) 6 b) 6 c) $|x^2| + 4$

45. $x = 6$

46. $x = \frac{-3 \pm \sqrt{73}}{4}$

47. $x = -\frac{23}{4}$

48. $x^3 - 2$ or $x = -13$

49. $x = \frac{5}{2}$

50. no solution

51. $x = -1$

52. $t = \frac{15}{8}$

53. $x = -\frac{1}{5}$

54. $x = 0, \pm 1$

55. $x = 5 \pm 2\sqrt{2}$

56. $x = -\frac{1}{3}, -1$

57. $x = 3 \pm \sqrt{5}$

58. $x = 3, -1$

59. $x = -\frac{11}{3}$

60. $x = 11$

61. $x = 2$

62. $x = 4$

63. $2\sqrt{2}x$

64. $|x|\sqrt[4]{x}$

65. $\frac{10\sqrt{7x}}{x}$

66. $10\sqrt{5} + 15$

67. $y^{1/6}$ or $\sqrt[6]{y}$

68. $\frac{-20}{(x+5)(x-5)}$

69. $\frac{3x-2}{x(x-1)}$

70. $\frac{3x-5}{2(x-5)}$

71. $\frac{(x-4)\sqrt{x^2 - 4}}{(x+2)(x-2)}$

72. $\frac{x+1}{x(x+2)}$

73. $\frac{x+1}{(x-7)(x+3)}$

74. $(x-5-y)(x-5+y)$

75. $(x-4)(x^2 + 4x + 16)$

76. $3x(x-5)(x+3)$