

# Algebra I Review

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## Add, Subtract, Multiply or Divide

1.  $4(3x + 3) - (x - 1) + 5(5x - 1)$

2.  $2(-9)$

3.  $5 - (-12)$

4.  $\frac{36}{-4}$

5.  $5 - 7$

6.  $-10x + 9x$

7.  $7a - 3b + 2a + 5b$

8.  $-4(6y + 9) + 5(3y - 2)$

## Solve the equations.

9.  $2x + 1 = -7$

10.  $8y - 10 = -2y + 20$

11.  $4(2z - 5) = 7z - 2$

12.  $\frac{1}{2}(4x - 12) = \frac{1}{5}(20x + 15)$

13.  $3a - 2 - 5a + 3 = -4a + 11$

## Simplify.

14.  $4x^2 \cdot 3x^5$

15.  $(3x^2)^3$

16.  $\frac{8x^7}{4x^2}$

17.  $(2x+7)(x-4)$

18.  $(x - 5)^2$

19.  $(x - 8)(3x - 2)$

20.  $(x + 3)(x^2 + 4x - 10)$

21.  $(3x^2 + x - 8) + (x^2 + 5x + 10)$

22.  $(x^2 + 3x - 4) - (3x^2 - 5x + 2)$

23.  $(-8p^2)(2p^4)$

**Factor.**

24.  $x^2 - 5x + 6$

25.  $x^2 + 5x - 6$

26.  $x^2 - 81$

27.  $4x^2 - 25$

28.  $4x^2 + 20x + 25$

29.  $2x^2 - 7x - 15$

30.  $3x^2 + 16x + 21$

31.  $x^2 + 11x + 18$

32.  $x^2 - x - 20$

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

**Multiply or Divide these rational expressions.**

34.  $\frac{x^2-25}{6x-30} \cdot \frac{x-1}{x+5}$

35.  $\frac{5x-15}{3x+9} \cdot \frac{4x+12}{6x-18}$

36.  $\frac{x^2-25}{7} \div \frac{x-5}{21}$

$$37. \frac{x^2-3x-10}{4x} \div \frac{x+2}{x^2}$$

**Add or Subtract these rational expressions.**

$$38. \frac{2}{15x} + \frac{7}{15x}$$

$$39. \frac{m^2-7m}{m-3} + \frac{12}{m-3}$$

$$40. \frac{4}{(x-2)} + \frac{3}{(x+5)}$$

**Simplify these radicals.**

$$41. 3\sqrt{5} + 9\sqrt{5}$$

$$42. \sqrt{54}$$

$$43. 3\sqrt{8} - 4\sqrt{18}$$

$$44. 2\sqrt{5} \cdot 4\sqrt{3}$$

$$45. (3 + \sqrt{5})(2 - \sqrt{5})$$

$$46. \frac{3}{\sqrt{2}}$$

$$47. \frac{5}{2-\sqrt{3}}$$

$$48. 5\sqrt{32}$$

$$49. -2\sqrt{3} + 3\sqrt{27} - 10\sqrt{12}$$

**Solve these systems of Equations. Use elimination or substitution.**

$$50. \begin{cases} -7x - 8y = 10 \\ 2x + 6y = 12 \end{cases}$$

$$51. \begin{cases} 2x + 3y = 25 \\ -x + 2y = 12 \end{cases}$$

52. 
$$\begin{cases} 3x - 2y = 19 \\ x + y = 8 \end{cases}$$

53. Find the slope of the line that goes through the points (2,-4) and (5,9)

54. What is the slope of this line?  $y = \frac{2}{3}x - 5$

55. What is the slope of this line?  $3x + 5y = 10$

56. Find the x and y intercepts of the line  $-2x + y = 4$

57. Write the equation of the line that goes through the point (6,-2) and has a slope of 6.

58. Find the equation of the line passing through the two points (1,8) and (3,-2).

59. Are these lines parallel, perpendicular or neither?

$$2x + 3y = 10 \text{ and } 6x - 4y = 15$$

**Solve these quadratic equations.**

60.  $x^2 + 3x = -10$

61.  $m^2 = 49$

**Graph these parabolas.**

62.  $y = (x - 2)^2 - 9$

63.  $y = x^2 + 8x + 7$