

Algebra I Readiness for Honors Geometry & Honors Algebra 2**Student Name:** _____**Solve each equation for the given variable: Show all of your work.**

1.) $5y - \frac{3}{5} = \frac{4}{5}$

2.) $\frac{2}{3} + \frac{3}{5}m = \frac{31}{15}$

3.) $\frac{x}{3} + \frac{1}{8} = 19$

4.) $\frac{11}{16}z + \frac{7}{8}z = \frac{5}{16}$

5.) $6 + \frac{v}{-8} = \frac{4}{7}$

6.) $\frac{a}{20} + \frac{4}{15} = \frac{9}{15}$

Solve each proportion for the given variable:

7.) $\frac{10}{4} = \frac{z-8}{16}$

8.) $\frac{x-3}{3} = \frac{x+4}{4}$

9.) $\frac{3}{2b-1} = \frac{2}{b+2}$

10.) $\frac{4d+1}{d+9} = \frac{-3}{-2}$

11.) $\frac{x-1}{2} = \frac{x-2}{3}$

12.) $\frac{2n+1}{n+2} = \frac{5}{4}$

Solve each system by using the substitution method:

$$13.) \begin{aligned} y &= 2x - 10 \\ 2y &= x - 8 \end{aligned}$$

$$14.) \begin{aligned} x + 2y &= 14 \\ y &= 3x - 14 \end{aligned}$$

$$15.) \begin{aligned} 2y &= x + 1 \\ -2x - y &= 7 \end{aligned}$$

Solve each system by using the elimination method:

$$16.) \begin{aligned} 3x - 2y &= 8 \\ 2x - 2y &= 5 \end{aligned}$$

$$17.) \begin{aligned} x - 2y &= 3 \\ 3x - y &= 2 \end{aligned}$$

$$18.) \begin{aligned} 2x - 4y &= -6 \\ x - y &= -1 \end{aligned}$$

Simplify each expression. Use only positive exponents.

$$19.) (w^{-2}j^{-4})^{-3}(j^7j^3)$$

$$20.) \frac{a^2b^{-7}c^4}{a^5b^3c^{-2}}$$

$$21.) \left(\frac{c^5c^{-3}}{c^{-4}}\right)^{-2}$$

Write each expression in exponential form.

$$22.) \sqrt{(2m)^4}$$

$$23.) \sqrt[3]{125d^2}$$

$$24.) \sqrt{(49w)^2}$$

Simplify each expression, then write the expression in radical form.

$$25.) \left(x^{\frac{1}{3}}\right)\left(x^{\frac{2}{3}}\right)$$

$$26.) (ab)^{\frac{1}{3}}(b)^{\frac{1}{3}}$$

$$27.) (16x)^{\frac{1}{2}}\left(x^{\frac{1}{3}}\right)$$

Simplify each radical expression.

28.) $\frac{\sqrt{72}}{\sqrt{50}}$

29.) $\sqrt{45} \cdot \sqrt{18}$

30.) $\sqrt{\frac{44x^4}{11}}$

31.) $\sqrt{5}(\sqrt{20} - \sqrt{80})$

32.) $3\sqrt{300} + 2\sqrt{27}$

33.) $(\sqrt{5} + 1)(\sqrt{5} - 1)$

34.) $(\sqrt{3} + \sqrt{2})^2$

35.) $\frac{2}{\sqrt{2} - 2}$

36.) $\frac{\sqrt{3} + 1}{\sqrt{2} + 1}$

Simplify each product.

37.) $(5c + 3)(-c + 2)$

38.) $(2n - 3)(2n + 4)$

39.) $(3y - 2)(3y + 2)$

40.) $(5t + 4)^2$

41.) $(w^2 + 2)(w^2 - 2)$

42.) $(w + 2)(w^2 + 2w - 1)$

Factor each expression.

43.) $x^2 - 2x - 15$

44.) $5t^2 - t - 18$

45.) $9t^2 + 12t + 4$

Factor each expression.

46.) $25x^2 - 9$

47.) $3y^3 - 3y^2 - 6y$

48.) $2n^3 + 10n^2 + 3n + 15$

Solve each equation by factoring.

49.) $a^2 - a - 20 = 0$

50.) $3s^2 - 13s = -12$

51.) $6v^2 + 13v = 5$

Simplify each expression. State any restrictions (excluded values).

52.) $\frac{6b^2 + 42b}{b^3}$

53.) $\frac{x^2 - x - 6}{x^2 + 7x + 10}$

54.) $\frac{3y}{4y-8} \div \frac{9y}{2y^2-4y}$

55.) $\frac{5}{t+4} + \frac{3}{t-4}$