

Elementary Algebra Sample Common Final #3

1. Solve: $(x - 9)^2 = -80$

2. Graph: $x - 2y < 4$

3. Factor: $8x^3 - 27y^3$

4. Simplify: $2\sqrt{20} + \sqrt{45} - 3\sqrt{80}$

5. Factor completely: $ab^2 - 4a + 3b^2 - 12$

6. Lemon drops worth \$3.80 per pound are to be mixed with jelly beans that cost \$2.40 per pound to make 300 pounds of a mixture worth \$2.96 per pound. How many pounds of each candy should be used?

7. Solve: $x^3 + x^2 - 20x = 0$

8. Solve: $\frac{2x}{x^2-9} = \frac{1}{x+3} - \frac{4}{x-3}$

9. Evaluate: $\frac{-4^2 + 8 \div 4}{-4 - 2 - 1}$

10. The profit made by a strawberry farm varies directly as the number of baskets of strawberries sold. If profit of \$500 is made from the sale of 300 baskets, what is the profit when 1200 baskets are sold?

11. Solve and graph: $|2 - 3x| \geq 1$

12. Rationalize the denominator: $\frac{4x}{\sqrt{20x^3}}$

13. Solve the system:
$$\begin{aligned} \frac{x}{2} + \frac{y}{6} &= \frac{2}{3} \\ \frac{x}{3} - \frac{y}{4} &= \frac{1}{12} \end{aligned}$$

14. Simplify: $\left(\frac{2x^{-2}y^3}{z^{-3}}\right)^3$

15. Solve: $\frac{x}{3} = \frac{4}{x+1}$

16. Find the equation of the line passing through $(4, -3)$ and $(0, 5)$. Write the answer in slope-intercept form.

17. Graph the following equation: $y = x^2 + 2x - 3$

18. Write the quotient in the standard form $a + bi$: $\frac{3+i}{3-i}$

19. Simplify: $\frac{1 + \frac{6}{x} + \frac{8}{x^2}}{1 + \frac{1}{x} - \frac{12}{x^2}}$

20. Solve: $\sqrt{15 - 3x} + 5 = x$

21. Divide: $\frac{x^2 - 4x + 6}{x-2}$

22. Solve the inequality. Write the solution set in interval notation:
 $3 < 2x - 1 \leq 5$

23. Graph the following equation: $(x + 1)^2 + y^2 = 4$

24. A rectangular shape x-ray film has an area of 80 square inches. The length is 2 inches longer than the width. Find its width and the length.

25. Solve the system:
$$\begin{aligned} x + y + z &= 6 \\ x + 2y - z &= 1 \\ 2x - y + z &= 6 \end{aligned}$$

26. Solve for a : $\frac{1}{a} + \frac{1}{b} = 1$

27. Simplify: $\frac{2}{a^2 - 4a + 3} - \frac{1}{a-3}$