

1. Solve $\frac{a}{a+7} - 3 = \frac{4a}{a+7}$.

- a) $\left\{-\frac{7}{2}\right\}$
- b) $\left\{-\frac{13}{2}\right\}$
- c) $\left\{-\frac{9}{2}\right\}$
- d) $\{-7\}$
- e) $\{3\}$

2. Find the center of the circle $x^2 + y^2 - 10x - 14y - 95 = 0$.

- a) $(-7, -5)$
- b) $(-7, 5)$
- c) $(7, -5)$
- d) $(5, 7)$
- e) $(7, 5)$

3. Simplify $\frac{5}{8x^2y} - \frac{2x}{4y^2}$.

- a) $\frac{5y - 4x}{8x^2y^2}$
- b) $\frac{5 - 4x^3}{8x^2y^2}$
- c) $\frac{5y - 4x^3}{8x^2y^2}$
- d) $\frac{5y - 4x^3}{8x^2y}$
- e) $\frac{5 - 2x}{4xy}$

4. Solve the quadratic equation $(x - 2)^2 = 36$.

- a) $\{8, -4\}$
- b) $\{-4, 4\}$
- c) $\{8, -8\}$
- d) $\{6, -6\}$
- e) $\{2, 36\}$

5. Write $(8 + 6i)^2$ in standard form.

- a) $28 + 96i$
- b) $28i + 96$
- c) $28 - 96i$
- d) $-28 - 96i$
- e) $64 + 36i$

6. Solve $\begin{cases} \frac{1}{2}x - \frac{1}{3}y = 8 \\ x + 4y = -54 \end{cases}$.

- a) $(6, -15)$
- b) $(6, 15)$
- c) $(-15, 6)$
- d) infinitely many solutions
- e) no solutions

7. Lisa bought 5 packages of candies and 2 sacks of potato chips for \$7.50. Later she bought 4 packages of candies and 3 sacks of potato chips for \$8.10. Find the price of a package of candies.

- a) \$0.90
- b) \$0.85
- c) \$0.50
- d) \$0.75
- e) \$1.00

8. Simplify $\frac{\sqrt[3]{5}}{\sqrt[4]{5}}$.

- a) $\sqrt[12]{25}$
- b) $\frac{1}{\sqrt[12]{5}}$
- c) $\sqrt[3]{5}$
- d) $\sqrt[12]{5}$
- e) $\frac{1}{\sqrt{5}}$

9. What is the graph of $9x^2 + 4y^2 = 16$?

- a) point
- b) ellipse
- c) circle
- d) parabola
- e) hyperbola

10. A small-town library buys a total of 43 books that cost \$684. Some of the books cost \$12 each, and the remainder cost \$19 per book. How many books of each price did they buy?

- a) 25 books that cost \$12, 18 books that cost \$19
 b) 18 books that cost \$12, 25 books that cost \$19
 c) 19 books that cost \$12, 24 books that cost \$19
 d) 20 books that cost \$12, 23 books that cost \$19
 e) 23 books that cost \$12, 20 books that cost \$19

11. Solve $\begin{cases} \frac{2x}{3} - \frac{4y}{5} = 92 \\ \frac{7x}{5} + \frac{y}{6} = 27 \end{cases}$.

- a) $x = 30, y = -90$
 b) $x = -30, y = -90$
 c) $x = 30, y = 90$
 d) no solutions
 e) infinitely many solutions

12. Find the vertex of the parabola $y = (x + 1)^2 - 1$.

- a) $(1, -1)$
 b) $(-1, 1)$
 c) $(1, 1)$
 d) $(0, -1)$
 e) $(-1, -1)$

13. Solve $-21m^2 + 2m + 1 = 0$.

- a) $\frac{-1 \pm i\sqrt{22}}{21}$
 b) $\frac{1 \pm i\sqrt{22}}{21}$
 c) $\frac{-1 \pm \sqrt{8}}{42}$
 d) $\frac{-1 \pm \sqrt{22}}{21}$
 e) $\frac{1 \pm \sqrt{22}}{21}$

14. Solve $\begin{cases} 7x + 6y = -15 \\ 6x - 15y = 108 \end{cases}$.

- a) $x = 6, y = -3$
 b) $x = 6, y = 3$
 c) $x = 3, y = -6$
 d) infinitely many solutions
 e) no solutions

15. Rationalize the denominator and simplify $\frac{\sqrt{z}}{\sqrt{z} - 10}$.

- a) \sqrt{z}
 b) $\frac{11z}{z - 100}$
 c) $\frac{z + 10\sqrt{z}}{z - 100}$
 d) $\frac{10\sqrt{z}}{z - 100}$
 e) $\frac{z + 10\sqrt{z}}{z - 10}$

16. Simplify $\frac{9}{x^2 + 2x - 8} - \frac{2}{x - 2} - \frac{3}{x + 4}$.

- a) $\frac{5x + 7}{(x + 2)(x - 4)}$
 b) $\frac{5x + 7}{(x - 2)(x + 4)}$
 c) $\frac{-5x + 7}{(x - 2)(x + 4)}$
 d) $\frac{-5x + 7}{(x + 2)(x - 4)}$
 e) $\frac{4}{(x + 2)(x - 4)}$

17. Solve $x^2 + 2x - 1 = 0$.

- a) $x = \sqrt{2} \pm 1$
 b) $x = 1 \pm \sqrt{2}$
 c) $x = -1 \pm \sqrt{2}$
 d) $x = 2, -1$
 e) $x = -2, 1$

18. Solve the inequality $x^2 + 2x - 35 < 0$.

- a) (5, 7)
- b) (-7, 5)
- c) (-5, 7)
- d) $(-\infty, \infty)$
- e) (-2, 35)

19. Solve the inequality $\frac{x-2}{x-5} \leq 2$.

- a) $(-\infty, 5) \cup (8, \infty)$
- b) (5, 8)
- c) $(-\infty, -8) \cup (-5, \infty)$
- d) (2, 5)
- e) $(-\infty, \infty)$

20. Simplify $5\sqrt[3]{2} + 5\sqrt[3]{54} - 5\sqrt[3]{16}$.

- a) $10\sqrt[3]{2}$
- b) $-10\sqrt[3]{3}$
- c) $-10\sqrt[3]{2}$
- d) $10\sqrt[3]{3}$
- e) $5\sqrt[3]{2}$

21. Find the intercepts for $49x^2 - 9y^2 = 9$.

- a) $(\frac{3}{7}, 0)$ and $(-\frac{3}{7}, 0)$
- b) $(0, \frac{3}{7})$ and $(0, -\frac{3}{7})$
- c) $(0, \frac{7}{3})$ and $(0, -\frac{7}{3})$
- d) $(\frac{7}{3}, 0)$ and $(-\frac{7}{3}, 0)$
- e) (3, 0) and (-3, 0)

22. Solve $n + \frac{10}{n} = \frac{77}{6}$.

- a) $\{-12, \frac{5}{6}\}$
- b) $\{-12, -\frac{5}{6}\}$
- c) $\{-\frac{5}{6}, 12\}$
- d) $\{\frac{5}{6}, 12\}$
- e) {10, 77}

23. Simplify $\frac{8a^2 - 40a}{a^3 - 4a^2} \cdot \frac{a^2 - 8a + 16}{a^2 - 25}$.

- a) $\frac{8a^2 + 32}{a^2 + 5a}$
- b) $\frac{a - 4}{a^2 + 5a}$
- c) $\frac{8a - 32}{a^2 + 5a}$
- d) $\frac{8}{a^2 + 5a}$
- e) $\frac{8a + 32}{a^2 - 5a}$

24. Write the equation of the circle with center at (0, 0) and the length of a radius $r = \sqrt{37}$.

- a) $x^2 + y^2 = \frac{1}{37}$
- b) $x^2 + y^2 = \sqrt{37}$
- c) $x^2 + y^2 = 37^2$
- d) $x^2 + y^2 = 1$
- e) $x^2 + y^2 = 37$

25. Solve $-\frac{5}{x-20} = \frac{11}{y-1}$ for the variable y .

- a) $y = \frac{11}{5}x + 45$
- b) $y = \frac{5}{11}x - 45$
- c) $y = -\frac{11}{5}x + 45$
- d) $y = x - 20$
- e) $y = -\frac{11}{5}x - 5$

26. Solve the equation $\sqrt{-2x+5} = x-1$.

- a) $x = 2$
- b) $x = -1$
- c) $x = 1$
- d) $x = -5$
- e) $x = 5$

27. Simplify $\left(\frac{3^{-1}}{5^{-2}}\right)^{-1}$.

- a) $\frac{25}{3}$
- b) $\frac{9}{25}$
- c) $\frac{3}{25}$
- d) $\frac{25}{9}$
- e) $\frac{5}{3}$

28. Simplify $\frac{\sqrt[3]{100xy}}{\sqrt[3]{4x^2y^5}}$.

- a) $\frac{25\sqrt[3]{xy}}{xy^2}$
- b) $\frac{5\sqrt[3]{x^2y^2}}{xy^2}$
- c) $\frac{\sqrt[3]{25x^2y^2}}{xy^2}$
- d) $\frac{\sqrt[3]{25xy}}{xy^2}$
- e) $\frac{5}{xy^4}$

29. Simplify $\sqrt[3]{24}$.

- a) $3\sqrt[3]{2}$
- b) 2
- c) $2\sqrt[3]{3}$
- d) $\sqrt[3]{3}$
- e) 72

30. Simplify $\frac{5n^2 - 39n - 8}{4n^2 - 34n + 16}$.

- a) $\frac{n-1}{n+2}$
- b) $\frac{5(n+1)}{4(n-2)}$
- c) $\frac{5n+1}{4n-2}$
- d) $\frac{n+5}{n-4}$
- e) $\frac{5n-1}{4n+2}$

ITEM NO.	FORM:	A
1		A
2		D
3		C
4		A
5		A
6		A
7		A
8		D
9		B
10		C
11		A
12		E
13		E
14		C
15		C
16		C
17		C
18		B
19		A
20		A
21		A
22		D
23		C
24		E
25		C
26		A
27		C
28		C
29		C
30		C