

Name: _____

Please show all work and justify your answers writing neatly and legibly.

1. Multiply the following expression, then reduce the resulting fraction to lowest terms:
 $(-3)\left(\frac{2}{5}\right)\left(-\frac{1}{2}\right)$

2. Evaluate the expression $\sqrt{81}$.

3. Evaluate the expression $\frac{1}{81^{-1/2}}$.

- a. $\frac{1}{9}$ b. 9 c. $-\frac{1}{9}$
d. -9 e. None of these

4. Simplify the expression $\sqrt{75x^2y^{-4}}$.

- a. $\frac{5\sqrt{3}x}{y^2}$ b. $\frac{3\sqrt{5}|x|}{y^2}$ c. $5\sqrt{3}|x|y^2$
d. $\frac{5\sqrt{3}|x|}{y^2}$ e. None of these

5. Multiply: $(x + 4y)^2$.

- a. $x^2 + 8xy + 16y^2$ b. $x^2 + 16y^2$ c. $x^2 + 4xy + y^2$
d. $x^2 + 4y^2$ e. None of these

6. Factor the expression $x^2 + x - 12$.

- a. $(x - 4)(x - 3)$ b. $(x + 4)(x - 3)$ c. $(x + 6)(x - 2)$
d. $(x - 12)(x - 1)$ e. None of these

7. Factor the expression $81 - 4x^2$.

8. Find the domain of the expression $\frac{3x + 1}{x^2 - 2x}$.

9. Subtract, then simplify: $\frac{2}{x - 3} - \frac{1}{x + 2}$.

- a. $\frac{1}{(x - 3)(x + 2)}$ b. $\frac{x - 1}{(x - 3)(x + 2)}$ c. $\frac{x + 7}{(x - 3)(x + 2)}$
d. $\frac{x + 1}{(x - 3)(x + 2)}$ e. None of these

10. Complete the following table using $y = x^2 - 2x$. Then use the table to sketch the graph of the equation.

x	-1	0	1	2	3
y					

11. Check the following equation for symmetry with respect to both axes and the origin:
 $x^2 + xy + y^2 = 0$.

12. Find the center and radius of the circle with equation $(x - 2)^2 + (y + 3)^2 = 25$.

13. Determine whether the following equation is a conditional equation or an identity:
 $3x + 4(x - 2) = 10x$.

14. Solve the following equation for x : $8x - 2 = 13 - 2x$.

15. Solve the following equation for x : $2[x - (3x + 1)] = 4 - 2x$.

16. Solve the following equation for x : $\frac{3x}{2} - \frac{x+1}{4} = 6$.
17. Solve the following quadratic equation for x : $5x^2 - 2 = 3x$.
- a. $\frac{2}{5}, -1$ b. $-\frac{1}{5}, 2$ c. $-\frac{2}{5}, 1$ d. $\frac{1}{5}, -2$ e. None of these
18. Solve the following quadratic equation for x : $2x^2 - 50 = 0$.
19. Solve the following equation for x by completing the square: $x^2 - 8x + 2 = 0$.
20. A telephone call costs \$0.31 for the first minute plus \$0.24 for each additional minute. Write an algebraic expression for the cost of a call lasting x minutes.
21. Find the original price of a television set that was reduced 40% and is now priced at \$285.50.