NASSAU COMMUNITY COLLEGE
PLACEMENT TESTING ALGEBRA

Algebra Review

For 1 to 4 perform the indicated operations and simplify

1. \(4(x^2 - x) + 5 - 2x(x - 3) + x^2(6 + x)\)

2. \((4z - 1)^2\)

3. \(\frac{20a^2b^4 + 15a^2b^2 - 10a^4b}{5a^2b}\)

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

5. Find the value of \(3a^2 - 4ab - 2b^2\) when \(a = -1\) and \(b = 4\)

6. Factor completely \(4r^2 - 49\)

7. Factor completely \(2x^2 + 14x + 24\)

8. Solve \(6z - 2(z + 4) = 3(9 - z)\)

9. Solve \(a^2 - 7a - 30 = 0\)

10. For the equation of the line, determine if the indicated point lies on the line.

\[ y = -3x - 10 \quad (-4, -2) \]

11. Solve the system of equations:

\[
\begin{align*}
4x - 3y &= -19 \\
2x + y &= 13
\end{align*}
\]

12. Solve the inequality:

\(3k + 7 < 2k + 9\)

13. Simplify the radical expression:

\[ 3\sqrt{75} + 2\sqrt{27} \]

14. Simplify: \((2x^2 + 9x - 6) - (8x^2 + 7x + 6)\)
15. Solve the following equation for \( h \): \( V = \frac{1}{3} \pi r^2 h \)

16. Solve for \( x \): \( \frac{2x}{6} = 9 \)

17. Divide and write answer in lowest terms: \( \frac{-5k^2}{2k^8} \div \frac{(2k)^3}{10k^5} \)

18. If the sum of a number and 4 is subtracted from 6, the result is the same as twice the number increased by 5. Find the number.

19. Complete the ordered pair for the equation: \( y = -5x - 9 \) \((-2, \ \ )\)

20. Write the expression in lowest terms: \( \frac{a^2-9a}{(a+8)(a-9)} \)
Algebra Answers

1. \[ x^3 + 8x^2 + 2x + 5 \]
2. \[ 16z^2 - 8z + 1 \]
3. \[ 4b^3 + 3ab - 2a^2 \]
4. \[ \frac{11x}{12} \]
5. \(-13\)
6. \((2r - 7)(2r + 7)\)
7. \(2(x + 3)(x + 4)\)
8. \(z = 5\)
9. \(a = 10 \text{ and } a = -3\)
10. No
11. \(x = 2 \text{ and } y = 9\)
12. \(k < 2\)
13. \(21\sqrt{3}\)
14. \(-6x^2 + 2x - 12\)
15. \(h = \frac{3V}{\pi r^2}\)
16. \(x = 27\)
17. \(-\frac{25}{8k}\)
18. \(-1\)
19. \((-2, 1)\)
20. \(\frac{a}{a+8}\)