

1. Evaluate $19 + (-16) - 8 - (-15) + 7$

Simplify

2. $(7 - 5)[8 - (7 + 6)]$

3. $-10(8x + 4) + 5(4x + 4)$

4. $-(-4x + 9y - 8z)$

5. $8(7x + 4y + 8)$

6. $6 + (-10x) + 4x - 3$

7. $(-19a^5 + 19a^3) - (-10a^5 - 2a^3)$

8. $\left(\frac{1}{4}x^2 - \frac{5}{8}x + \frac{2}{5}\right) + \left(\frac{1}{6}x^2 - \frac{1}{4}x + \frac{7}{10}\right)$

9. $y^{-7} \cdot y^{-2}$

10. Write this phrase in mathematical symbols:

The difference between six times a number and five.

11. Evaluate the polynomial $-3x^3 - 6x^2 + 21$ for $x = -3$

12. Simplify $\frac{2 \times 10^{-9}}{8 \times 10^{-1}}$ and put the result in scientific notation.

Solve.

13. $-3w + 4 = -4(2 + w) + 8w$

14. $\frac{2}{5}x - \frac{1}{3}x = 2$

15. $F = \frac{9}{5}C + 32$, solve for C

16. $-4(2y - 8) < -12y + 12$

Multiply and simplify.

17. $(2p - 1)(4p^2 + 2p + 1)$

18. $(5x - 10)(2x - 8)$

19. $(4x - 9)(4x - 9)$

20. $(3a - 10)^2$

Divide.

21. $(6x^{10} + 18x^6) \div (3x^2)$

22. $\frac{x^2 - 9x + 5}{x - 7}$

Factor completely.

23. $8a^3 - 12a^2b + 6ab^2 - 9b^3$

24. $x^2 + 9x - 36$

25. $15x^2 + 4x - 4$

26. $25x^2 - 36$

27. $9x^2 + 16$

Simplify.

28. $\frac{k^2 + 10k + 16}{k^2 + 11k + 18} \cdot \frac{k^2 + 9k}{k^2 + 17k + 72}$

29. $\frac{2}{y^2 - 3y + 2} + \frac{7}{y^2 - 1}$

30. $\frac{6}{8x - 2} - \frac{4}{2 - 8x}$

31. $\frac{\frac{y}{7}}{\frac{3}{y + 8}}$

32. Find the slope and y-intercept of the line with equation $-2x + 3y = 9$

33. Write the equation of the line that passes through (2, 5) and has slope, $m = -\frac{5}{6}$.

34. Find the slope of the line that passes through (-3, -1) and (-2, 1).

35. Find the x-intercept and the y-intercept for the line with equation $-2x + 4y = 8$

36. Determine whether the pair of lines is *parallel*, *perpendicular*, or *neither*:
$$\begin{array}{l} 3x - 2y = 4 \\ 2x + 3y = 4 \end{array}$$
37. Simplify completely: $-2\sqrt{18} - 5\sqrt{8}$
38. Rationalize the denominator and simplify: $\frac{2\sqrt{5}}{\sqrt{8}}$
39. Simplify. Write the answer without any negative exponents: $\frac{x^{-4}}{x^{-7}}$
40. Solve this quadratic equation using factoring: $3x^2 = -7x + 6$
41. Solve this quadratic equation using the quadratic formula: $6x^2 + 12x + 5 = 0$
42. Solve the equation $1 + \frac{1}{x} = \frac{56}{x^2}$
43. Connie is a landscape artist and has created a lawn that is in the shape of a triangle. The longest side of the triangle is three times the length of the shortest side, and the third side is 12 feet more than twice the shortest side. If the perimeter of the triangle is 120 feet, what are the lengths of the three sides?
44. Frank can sort a crate of mail in 20 minutes and James takes 60 minutes to sort a crate of mail. How long will it take the two of them to sort a crate of mail working together?
45. The sum of twice a number and 7 less than that number is equal to the difference between -31 and the number. What is the number?