

1. List all factors of 90.

2. Simplify each of the following expressions.

(a)  $(-1)^1 + (-1)^2 + (-1)^3 + (-1)^4 + (-1)^5 + (-1)^6 =$

(b)  $\frac{\frac{3}{4} + \frac{8}{15} \div \left(-\frac{2}{5}\right)}{2\frac{1}{3}} =$

(c)  $\frac{-2^2 + (-1)^2 + (-2) \left( (-3)^2 - |-2^2 + 5| + 1 \right)}{-1 \div (-1) \cdot (-3)} =$

3. Completely factor each of the following polynomials.

(a)  $12abx^2 - 75a^3b =$  (5.2 Example 3)

(b)  $48x - 3x^3 =$  (5.2 Example 3)

(c)  $(2a - 5)^2 - 16 =$

(d)  $10ax^2 - 25ax - 15a =$

(e)  $5x^5 - 405x =$  (5.2 Example 4)

(f)  $(2x - 3y)^2 - (x - y)^2 =$

4. Solve each of the following equations. Make sure to check your solutions.

(a)  $3(2x - 5) - 2(1 - 5x) - 2x = 7(2x - 3) + 4$  (7.1 Example 3)

(b)  $\frac{3 - x}{5} - \frac{4x - 1}{3} = 2x + 8$  (7.1 Example 2)

(c)  $5x^2 = 45$

(d)  $3x(x - 2)(x + 5) = 0$

(e)  $\frac{2}{7}x - 1\frac{3}{4} = 4\frac{1}{4}$

(f)  $3(x - 4) - 5(3 - x) = -27$

(g)  $\frac{5x + 1}{2} - \frac{2x - 1}{3} = \frac{11x - 5}{6}$

(h)  $15x^3 = 27x^2 + 6x$

(i)  $\frac{x - 5}{3} + \frac{8 - x}{2} = 2x + 11$

5. Word Problems.

(a) The sum of two numbers is 27, their difference is 19. Find these numbers.

(b) The sum of two numbers is 13, their difference is 31. Find these numbers.

(c) The product of two numbers is 240, their difference is 8. Find these numbers.

(d) One side of a rectangle is 3 in longer than twice the other side. The perimeter of the rectangle is 36 in. How long are the sides of the rectangle?

(e) One side of a rectangle is 3 in longer than twice the other side. The area of the rectangle is 189 in<sup>2</sup>. How long are the sides of the rectangle?