

1. Simplify each of the following expressions.

(a) $2x^3(x^5) =$

(b) $(2x)^3(x^5) =$

(c) $(-2xy^2)^2 =$

(d) $(-a^2b)^3(a^4b)^2 =$

2. Multiply the polynomials as indicated.

(a) $(2a - 3)^2 =$

(b) $(2a + 3)(2a - 3) =$

(c) $(3x - 1)^3 =$

(d) $(x - 3)(3x + x^2 + 9) =$

3. Factor out the greatest common factor from each of the following polynomials.

(a) $10a^2b^2 - 6ab^3 + 2ab^2 =$

(b) $2ax^3 - ax^2 - 5ax^4 =$

(c) $4a^7b - 4a^3b + 12a^2b^2 =$

4. Factor out -1 from each of the following. Present your answer in terms organized by degree from highest to lowest.

(a) $-x^4 - 2x^7 + 3 =$

(b) $1 - 5x =$

(c) $3x + 8 - 5x^2 =$

(d) $4a - 4a^2 - 1 =$

5. Completely factor each of the following polynomials.

(a) $x^2 - 9 =$

(b) $-49 + 25x^2 =$

(c) $x^4 - 81 =$

(d) $1 - x^{10} =$

6. Solve each of the following equations. Make sure to check your solutions.
- (a) $|2a - 7| = 7$
 - (b) $|2a - 7| = -7$
 - (c) $b^3 = 4b^2$
 - (d) $b^3 = 9b$
7. Graph the straight lines $y = 2x - 4$ and $y = -2x + 4$ in the same coordinate system.
8. Graph the straight lines $y = -x - 1$ and $y = x + 1$ in the same coordinate system.
9. Graph $y = x^2$ (Hint: this will NOT be a straight line).
10. Julia is 5 years younger than her brother, Tom. How old are they if the sum of their ages is 43?
11. One side of a rectangle is 6 in shorter than the other side. Find the sides of the rectangle if its perimeter is 120 in.
12. One side of a rectangle is 6 in shorter than **twice** the other side. Find the sides of the rectangle if its perimeter is 120 in.
13. The largest angle in a triangle is three times as large as the smallest angle. The middle angle is 35° larger than the smallest angle. Find the angles in the triangle.