

Arrange the terms of each polynomial so the powers of x are in descending order.
(remember that the sign in front of a term travels with that term)

1. $3x + 1 + 2x^2$

2. $5 + x^2 - 3x^3 + x^4$

Add or subtract the following polynomials. Adding polynomials is the same as combining like terms.

3. $(3x + 5) + (x - 2)$

4. $(6x^2 + 3x - 2) + (4x^2 - x + 9)$

5. $4x(2x^2 + 3x - 2) + 3(x^2 + 2x + 1)$ (distribute first!)

6. $3x(x^2 - 4x + 2) - 2(x^2 - 2x + 1)$ (distribute first!)

Multiply the following polynomials.

7. $(x + 4)(x + 3)$

8. $(3x + 5)(x - 2)$

9. $(3x - 5)^2$ Write it out twice!

10. $(y + 1)(2y^2 + 3y + 4)$

11. $(x + 2)(x^2 - 2x + 4)$

12. $(x + 6)^3$ Write it out 3 times!

Divide using Long Division.

13. $(3x^2 + 10x - 8) \div (x + 4)$

Quotient = _____

Is $(x+4)$ a factor of the dividend? _____

Why or why not? _____

Divide using Synthetic Division.

14. $(x^3 + 64) \div (x + 4)$ Do you need placeholder?

Quotient = _____

Is $(x+7)$ a factor of the dividend? _____

Why or why not? _____

15. $(2x^4 + 7x^3 - 26x^2 + 23x - 6) \div (x - 1)$

Quotient = _____

Is $x=1$ a solution of $26x^4+7x^3-26x^2+23x-6$? _____

Why or why not? _____