

## 4.4 Multiplication of Polynomials

### Need To Know



- Multiply a monomial times a polynomial
- Multiply a polynomial times a polynomial
- Multiply a binomial times a binomial

## Monomial times Monomial

Recall Multiplication:

$$(-x^3)(x^4)$$

$$(-4y^4)(6y^2)(-3y^2)$$

Exponent Properties

1)  $a^r \cdot a^s = a^{r+s}$

2)  $(a^r)^s = a^{rs}$

3)  $(ab)^r = a^r b^r$



## Monomial times Polynomial

Recall:

$$a(b + c) =$$

Exponent Properties

1)  $a^r \cdot a^s = a^{r+s}$

2)  $(a^r)^s = a^{rs}$

3)  $(ab)^r = a^r b^r$

Multiply:

$$2x(4x^2 + 5x - 3) =$$



## Polynomial times Polynomial

Multiply:

$$(x + 2)(x^2 - 3x + 4)$$

Recall Column Multiply

$$324$$

$$\underline{x 13}$$



## Polynomial times Polynomial

Multiply:

$$(2x^2 + x + 1)(x^2 - 4x + 3)$$



## Binomial times Binomial

Multiply:

$$z + 5$$

$$\underline{z - 4}$$

Multiply:

$$(z - 4)(z + 5)$$

Short Cut: **FOIL**

**Multiply:**

**F** -

**O** -

**I** -

**L** -

## Practice

$$(3x + 5)(x - 4)$$

$$(x + 2y)(a + b)$$

$$(4x + 1)(3x - 5)$$

## Polynomial Problem Solving

Find a polynomial for the shaded area

**Area = Whole - White**

