

8-1 Dividing Polynomials

Objectives:

****8-1a: I can divide polynomials using synthetic division.****

8-1b: I can determine if a polynomial is a factor of another using division.

Synthetic Division (only with linear divisor)

- 1) Find the "zero" of the divisor.
- 2) Identify the coefficients of the dividend.
- 3) Set up 3 rows for synthetic division.
- 4) Add vertically and multiply diagonally.
- 5) Write quotient using new coefficients.

$$(3x^4 - 20x^3 + 27x^2 - 9x + 3) \div (x - 5)$$

$$(x^3 + 3x^2 - 4x - 12) \div (x + 3)$$

$$(2x^5 - 14x^4 + 5x^3 + 6x^2 - 5x + 16) \div (x - 1)$$

$$\textcircled{A} \quad (7x^3 - 6x + 9) \div (x + 5)$$

What does it mean for a number to be a factor of another?

How do you tell if a number is a factor?

Determine if $d(x)$ is a factor of $f(x)$.

$$2) \begin{aligned} f(x) &= 4x^2 - 18x + 8 \\ d(x) &= x - 4 \end{aligned}$$

Determine if $d(x)$ is a factor of $f(x)$.

$$2) \begin{aligned} f(x) &= 5x^5 - 30x^4 + x^3 - 7x^2 + 8x \\ d(x) &= x - 6 \end{aligned}$$

