2.3B Synthetic Division

For long division of polynomials by divisors in the form $x - k$, synthetic division can be used.

$f(x) = x^4 - 10x^2 - 2x + 4$ $\qquad$ $d(x) = x + 3$

Use synthetic division:

$f(x) = 5x^3 + 8x^2 - x + 6$ $\qquad$ $d(x) = x + 2$

The remainder theorem:

If a polynomial $f(x)$ is divided by $x - k$, then the remainder is $r = f(k)$.

Use the remainder theorem to find each function value given:

$$f(x) = 4x^3 + 10x^2 - 3x + 8$$

a) $f(-1)$

b) $f(4)$

c) $f(1/2)$

d) $f(-3)$

Show that $(x - 2)$ and $(x + 3)$ are factors of:

$f(x) = 2x^4 + 7x^3 - 4x^2 - 27x - 18$, then find the remaining zeros.

Pull

Show that $(x + 3)$ is a factors of:

$f(x) = x^3 - 19x - 30$, then find the remaining zeros.

Long Division or Synthetic Division?

$f(x) = 6x^3 - 16x^2 + 17x - 6$ $\qquad$ $d(x) = 3x - 2$

Long Division or Synthetic Division?

$f(x) = 4x^3 - 7x^2 - 11x + 5$ $\qquad$ $d(x) = 4x - 5$

Section 2.3 B

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