

Accuplacer Study Modules

Topic: Divide Polynomials

Khan Academy Link: <https://www.khanacademy.org/math/algebra2/arithmetic-with-polynomials/long-division-of-polynomials/v/polynomial-division>

Steps to Divide Polynomials:

Step 1: Divide the first term of the numerator by the first term of the denominator, and put that in the answer.

Step 2: Multiply the denominator by that answer, put that below the numerator

Step 3: Subtract to create a new polynomial

Step 4: Repeat, using the new polynomial

Example:

$$\frac{x^2 - 3x - 10}{x + 2}$$

Step 1:

$$x+2 \overline{) x^2 - 3x - 10}$$

Step 2:

$$x+2 \overline{) x^2 - 3x - 10}$$

x

Step 3:

$$\begin{array}{r} x+2 \overline{) x^2 - 3x - 10} \\ -x^2 + 2x \\ \hline 0 - 5x - 10 \end{array}$$

Step 3:

$$\begin{array}{r} x-5 \\ x+2 \overline{) x^2 - 3x - 10} \\ -x^2 + 2x \\ \hline 0 - 5x - 10 \\ -5x - 10 \\ \hline 0 \end{array}$$

$$x+2 \overline{) x^2 - 3x - 10}$$

x

← quotient (answer)

$$\begin{array}{r} x+2 \overline{) x^2 - 3x - 10} \\ -x^2 + 2x \\ \hline 0 - 5x - 10 \end{array}$$

Divide the first term of the numerator by the first term of the denominator.

Multiply the denominator by the answer.
Subtract to create a new polynomial.

answer: $(x-5)$ Repeat, using the new polynomial.

Now complete the four practice problems on the next page and check your answers!

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<p>1. Divide $x^2 + 2x - 8$ by $(x - 2)$.</p>	<p>2. A rectangle has an area of $2x^2 - 5x - 1$ and a length of $(x - 3)$. What is the width of the rectangle?</p>
<p>3. Divide $x^6 + 2x^4 + 6x - 9$ by $(x^3 + 3)$</p>	<p>4. A rectangle has an area of $x^2 + 2x - 15$ and a width of $(x + 5)$. What is the length of the rectangle?</p>