



Math Virtual Learning

Algebra 2A

April 21, 2020



Lesson:
Polynomial Synthetic Division

Learning Target:
LT D3 I can evaluate and compose polynomial functions.

Objective:

Students will be able to evaluate polynomials. Students will be able to apply the operations of addition, subtraction, multiplication and division to polynomials.

Lesson-Review Day

For today, you will be reviewing operations with polynomials as well as evaluating polynomials. Below are two videos that you can use to review these topics if you need to.

Review for Polynomial Operations

[Polynomials - Adding, Subtracting, Multiplying and Dividing Algebraic Expressions](#)

Review for Evaluating Polynomials

[Prealgebra 10.1b - Evaluating Polynomials](#)

Practice

Evaluate each of these problems.

1. Find $f(3)$ for the equation $f(x) = x^3 - 3x^2 + 2x + 5$

2. Add: $(3x^2 + 2x + 5) + (5x^2 + 3x - 4)$

3. Subtract: $(3x^2 + 2x + 5) - (5x^2 + 3x - 4)$

4. Multiply: $(2x + 3)(3x - 4)$

5. Divide: $(3x^2 + 14x + 8) / (x + 4)$

Find $f(3)$ for the equation $f(x) = x^3 - 3x^2 + 2x + 5$

↑ Replace every x with (3)

$$f(3) = (3)^3 - 3(3)^2 + 2(3) + 5$$

Now Simplify

$$= 27 - 3(9) + 6 + 5$$

$$= 27 - 27 + 6 + 5$$

$$= 11$$

Add: $(3x^2 + 2x + 5) + (5x^2 + 3x - 4)$

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

$$= \boxed{8x^2 + 5x + 1}$$

1. Reorder like terms
together

2. Simplify

Subtract: $(3x^2 + 2x + 5) - (5x^2 + 3x - 4)$

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

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

$$= -2x^2 - x + 9$$

1. Distribute the negative

2. Reorder like terms

3. Simplify

Multiply: $(2x + 3)(3x - 4)$

	$3x$	-4
$2x$	$6x^2$	$-8x$
3	$9x$	-12

$$= 6x^2 - 8x + 9x - 12$$

$$= \boxed{6x^2 + x - 12}$$

1. Set up 2×2 box
2. Multiply inside
3. Combine like terms

Divide: $(3x^2 + 14x + 8) / (x + 4)$

$$\begin{array}{r} 3x + 2 \\ x + 4 \overline{) 3x^2 + 14x + 8} \end{array}$$

$$\ominus \underline{3x^2 + 12x} \quad \downarrow$$

$$2x + 8$$

$$\ominus \underline{2x + 8}$$

0 ← remainder

Answer: $3x + 2$

1. Set up division

$$2. x \cdot \underline{3x} = 3x^2$$

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

4. Subtract down

5. Repeat

Solutions to Practice Problems

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$$8x^2 + 5x + 1$$

$$-2x^2 - x + 9$$

$$6x^2 + x - 12$$

$$3x + 2$$

Additional Resources

[Simplifying and Evaluating Polynomials with More Than One Term](#)

[Khan Academy-Evaluating polynomials](#)

Additional Practice

[Evaluating Polynomial Functions – Practice Problems](#)

[Polynomial Operations](#)