Math Virtual Learning

Algebra 2A
Polynomial Synthetic Division
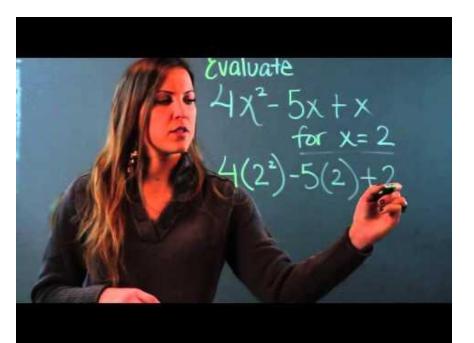
April 23, 2020

Lesson:
Evaluating Polynomials

Learning Target:
LT D3 I can evaluate polynomial functions.

Objective:
Students will be able to evaluate polynomials. Students will be able to apply the remainder theorem.

Lesson

You will need to watch the following videos:
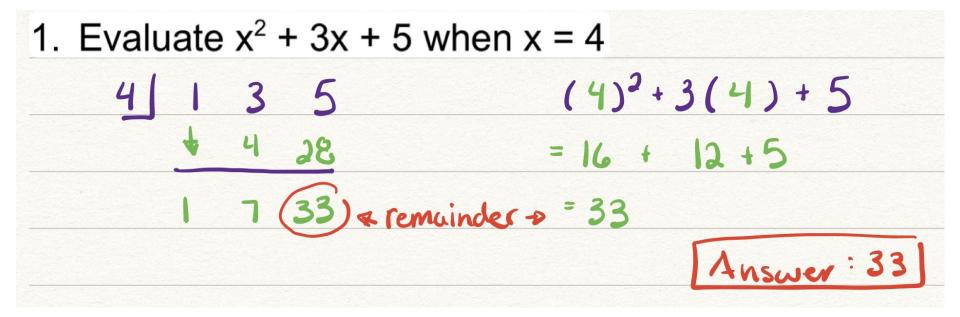
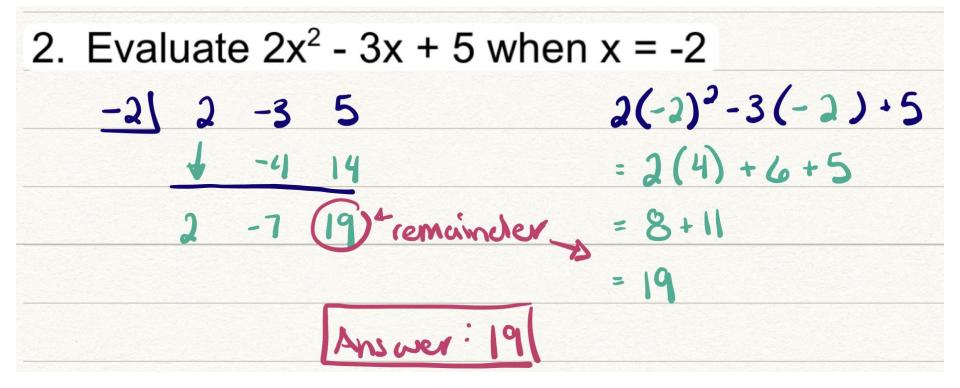

Evaluating Polynomials
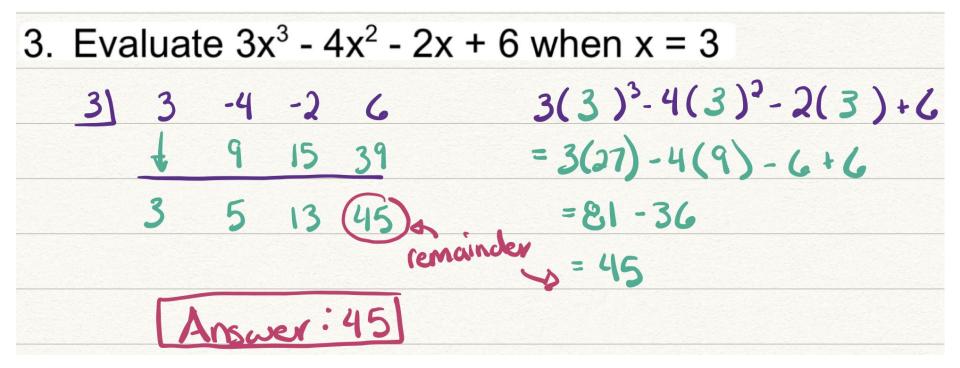
Practice

1. Evaluate $x^2 + 3x + 5$ when x = 4

2. Evaluate $2x^2 - 3x + 5$ when x = -2

3. Evaluate $3x^3 - 4x^2 - 2x + 6$ when x = 3

4. Evaluate $5x^4 - 7x^2 + 3x - 4$ when x = -1

1. Evaluate $x^2 + 3x + 5$ when $x = 4$

$4 \rfloor$ 1   3   5

$\quad\quad$ ↓   4   28

1   7   ⟨33⟩ ← remainder → $= 33$

$(4)^2 + 3(4) + 5$

$= 16 + 12 + 5$

$= 33$

Answer : 33

2. Evaluate $2x^2 - 3x + 5$ when $x = -2$

$$-2 \overline{\big)\ \ 2 \quad -3 \quad 5}$$

$$\ \ \downarrow \quad -4 \quad 14$$

$$\ \ 2 \quad -7 \quad \boxed{}\!\!\widehat{19}\ \leftarrow \text{remainder}$$

$\boxed{\text{Answer : } 19}$

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

$= 2(4) + 6 + 5$

$= 8 + 11$

$= 19$

3. Evaluate $3x^3 - 4x^2 - 2x + 6$ when $x = 3$

$3\rfloor\quad 3\quad -4\quad -2\quad 6$

$\qquad\quad 9\quad 15\quad 39$

$\qquad 3\quad 5\quad 13\quad \boxed{(45)}\;\leftarrow$ remainder

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

$= 3(27) - 4(9) - 6 + 6$

$= 81 - 36$

$= 45$

Answer: 45

4. Evaluate $5x^4 - 7x^2 + 3x - 4$ when $x = -1$

$$-1 \rfloor \quad 5 \quad 0 \quad -7 \quad 3 \quad -4$$

$$\downarrow \quad -5 \quad 5 \quad 2 \quad -5$$

$$5 \quad -5 \quad -2 \quad 5 \quad \boxed{-9}$$

$5(-1)^4 - 7(-1)^2 + 3(-1) - 4$

$= 5 - 7 - 3 - 4$

$= -9$

↑ remainder

Answer: -9

Answers to Practice Problems

1. 33

2. 19

3. 45

4. -9

Additional Resources

[Evaluating Polynomial Expressions](#)

[Remainder Theorem and Synthetic Division of Polynomials](#)

Additional Practice

[Evaluating Polynomials](#)