

# LESSON 5-2 Dividing Polynomials

I can perform long and synthetic division on polynomial expressions.

## Part 1: Synthetic Division

(ps. dividing factoring!)

Nov 5-3:31 PM

### Synthetic Division

$$(2x^3 - 5x^2 + 5x - 2) \div (x - 1) =$$

$x - 1 = 0$   
 $+1$   
 $x = 1$

<b>W</b>	<b>A</b>	<b>T</b>	<b>C</b>	<b>H</b>
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$$\begin{array}{r|rrrr}
 & 2 & -5 & 5 & -2 \\
 + & & 2 & -3 & 2 \\
 \hline
 & 2 & -3 & 2 & 0
 \end{array}$$

*no remainder*

$$2x^2 - 3x + 2$$

**2x<sup>2</sup> - 3x + 2 with r = 0**

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Make sure the polynomial is in standard form and all terms are accounted for.

(Add a  $0x$  or a  $0x^2$  for the applicable missing term)

Find the root of divisor. Set  $x$  to zero and solve.

Ex:

$$\cdot 2x^4 + x^2 + 3x - 7$$

$$2x^4 + 0x^3 + x^2 + 3x - 7$$

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$$(x^3 - 8x^2 + 4x - 9) \div (x - 4) =$$

$$\begin{array}{r}
 4 \overline{) 1 \quad -8 \quad 4 \quad -9} \\
 \underline{+ \quad 4 \quad -16 \quad -48} \\
 1 \quad -4 \quad -12 \quad \textcircled{-57} \\
 \text{(} x^2 - 4x - 12 - \frac{57}{x-4} \text{)}
 \end{array}$$

$x-4=0$   
 $x=4$

*remainder*

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S**

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$$(3x^3 - 8x^2 + 16x - 1) \div (x - 1) =$$

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$$(x^4 - 4x^3 + x^2 + 7x - 2)(x - 2)^1 =$$

$$\frac{(x^4 + 3x^3 - 3x + 3)(x + 2)^1}{(x + 2)}$$

W  
H  
A  
T  
?

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$$\frac{(27x^2 + 27x - 30)}{(9x - 6)} =$$

$$\begin{aligned} 9x - 6 &= 0 \\ +6 &+6 \\ \hline 9x &= 6 \\ \frac{9x}{9} &= \frac{6}{9} \\ x &= \frac{2}{3} \end{aligned}$$

$$\begin{array}{r} \frac{2}{3} \overline{) 27 \quad 27 \quad -30} \\ \underline{+ \quad 27 \quad 18 \quad 30} \\ 27 \quad 45 \quad 0 \end{array}$$

$$\frac{27x + 45}{9}$$

$$\boxed{3x + 5}$$

DIVIDE  
BY  
9!

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$$(6y^3 - 17y^2 + 6y + 8) \div (3y - 4) =$$

$$(x^4 + 3x^3 - 3x + 3)(x + 2) =$$

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$$(x^4 + 3x^3 - 3x + 3)(x + 2)^{-1} =$$

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

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## Homework

5.1 Part 2 Pg. 307 #29-39o, 53-59o

5.2 Part 1 Pg 315 #21-31o, 37-41o

Long Division Practice WS

Dec 13-7:14 AM

## Attachments

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Projectile Motion

Screen Capture(5).galleryitem