Synthetic Division

Uses the zero of the divisor. By reversing the sign of the divisor you can ADD throughout the process instead of subtracting.

Works only when the divisor is linear and the leading coefficient = 1

Meaning either $\div(x + a)$ or $\div(x - a)$

Find this quotient using Synthetic Division

$$\frac{2x^3 - 7x^2 + x - 13}{x - 2}$$

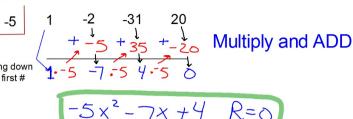
Before doing synthetic division make sure that there are no missing terms. If a term is missing you must put a zero in its spot.

When using synthetic division the degree of the quotient will always be one less than the degree of the dividend.

$$\frac{x^3 - 2x^2 - 31x + 20}{x + 5}$$

Zero of the Divisor

Coefficients of the dividend in Standard Form



Find this quotient using Synthetic Division

$$\frac{5x^4 - 2x^3 + 7x^2 - 6x + 3}{x + 4}$$

Before doing synthetic division make sure that there are no missing terms. If a term is missing you must put a zero in its spot.

$$\begin{bmatrix} -4 \end{bmatrix} 5 - 2 7 - 6 + 3 \\ -20 88 - 380 /549 \\ 5 - 22 95 - 386 /547 \end{bmatrix}$$

Find this quotient using Synthetic Division.

Is
$$x-3$$
 a factor of $2x^3 - 12x^2 + 21x - 9$?

Yes, X-3 is a factor because there is no remainder

Is
$$x - 5$$
 a factor of $2x^3 - 3x^2 - 39x + 20$?

$$(x + 7)$$
 is a factor of $x^3 + 11x^2 + 23x - 35$.

Find the other two factors. Divide by x+7 to find another factor.

x + 6 is a factor of $x^3 + 5x^2 - 18x - 72$.

Use this factor to help you factor this cubic completely.

Divide by x+6 to find another factor.

-6 1 5 -18 -72 -4 4 +72

> X2-X-12 FACTOR THIS TO FIND Remaining FACTORS

 $+\frac{3}{2} \left(x-4\right)\left(x+3\right)$

THE 3 FACTORS ARE: (X+6)(X-4)(X+3)

You can now finish Hwk #26

Sec 6-3

Due Monday

Page 324

Problems: 15, 16, 18, 19, 23, 49, 50, 53

You are now ready for Quiz #3