Pg. 153 2.3 – Polynomial and Synthetic Division

Long Division Algorithm:

1. Write the dividend in descending powers of the variable.
2. Insert placeholders with zero coefficients for missing powers of the variable.

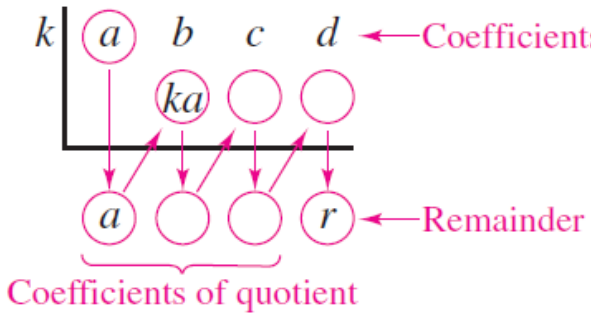
Ex 1:
Use long division to divide.
$\left(x^3+4x^2-3x-12\right)\div\left(x-3\right)$

Ex 2:
Use long division to verify that $y_1=y_2$
$y_1=\frac{x^2}{x+2},\ y_2=x-2+\frac{4}{x+2}$

Synthetic Division Algorithm:

Note: Only works when divisor is of the form x - k

To divide $ax^3 + bx^2 + cx + d$ by $x - k$, use the following pattern.



Vertical pattern: Add terms.
Diagonal pattern: Multiply by k.

Ex 3:

Use synthetic division to divide.

$\left(5x^3+6x+8\right)\div(x+2)$

Ex 4:

Use the given factors to find the remaining factor(s) of the function. Then state the function is factored form.

Function	Factors
$f(x)=2x^3+x^2-5x+2$	$(x+2),(x-1)$

Assignment 2.3

Pg. 159 Problem Set #'s 1-63 ODD

<u>REQUIRED</u>: 5, 13, 19, 25, 37, 45, 49, 57