3.6 Factoring Polynomials: *Part 1*

Math Learning Target:
"I can state the Remainder Theorem and the Factor Theorem.
By the end of next class, I can always apply it, when it is applicable."

Given: $p(x) = x^3 + 2x^2 - 5x - 6$

Evaluate: $p(-2)$ $p(1)$

Divide $p(x)$ by:

a) $x + 2$ b) $x - 1$

What do you notice?

The Remainder Theorem

Given polynomial function $p(x)$,
If $p(x)$ is divided by $x - a$, where $a \in \mathbb{R}$, the remainder is $p(a)$.

For the same polynomial function $p(x) = x^3 + 2x^2 - 5x - 6$

a) Evaluate $p(2)$

b) Divide by $x - 2$

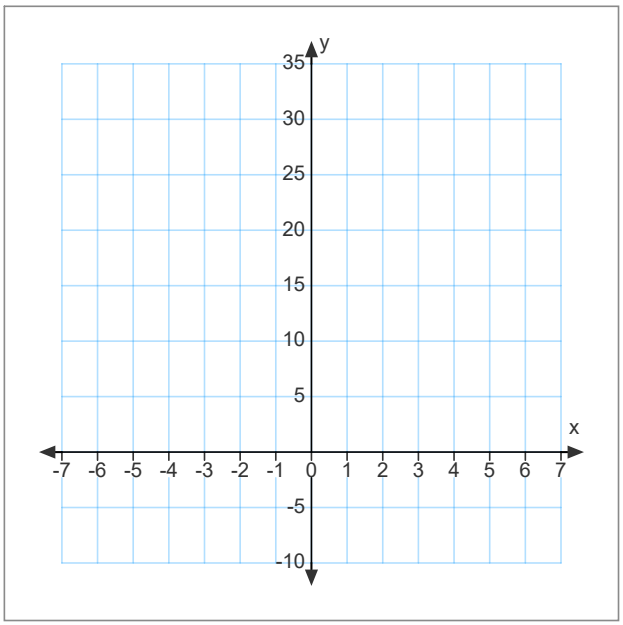
The Factor Theorem

Given polynomial function $f(x)$,

#1) If $f(a) = 0$, then $x - a$ is a factor of $f(x)$, and,

#2) If $x - a$ is a factor, then $f(a) = 0$, for all $a \in \mathbb{R}$

Factor this polynomial completely, if it is factorable: $f(x) = x^3 - 6x^2 - x + 30$



$$y = x^3 - 6x^2 - x + 30$$

Today's entertainment
pp. 176-177 #1 to 3, 4ace, 5ace