Rational zero theorem. Section 2.4 p 201- 202 -203.

With a polynomial of degree ≥ 3 :

- GCF → factor it out → Quadratic → X-method / Q.F
- Given Factor → synthetic ÷ → Quadratic → X-meth. / Q.F

Plug in each factor, then choose the one that equals the polynomial to zero → one factor

2 -5

Page 202 - 203 Read example 5/7

- without given factor → factor by grouping if possible.

with calculator → graph it → look at x-int → Find one of factors

No calculator → R.Z.T

$x^3 - 5x^2 + 2x - 10$

Factors:

$\pm 1 \quad \pm 2 \quad \pm 5 \quad \pm 10$

1 -10

-1 10

-2 5

Example 7:

$$\frac{\text{Factors of } 8}{\text{factors of } 2} \qquad \frac{\pm 1 \pm 2 \pm 4 \pm 8}{\pm 1 \pm 2}$$

p 205 : Quick Review #9.

$x^3 + 2x^2 - x(-2)$ Factors: $\pm 1, \pm 2$

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

$-8 + 8 + 2 - 2$ yes $x+2$ is a factor

$0 = 0$

$(x+2)(\ )(\ )$

$-2 \mid x^3 + 2x^2 - x - 2$

	1	2	-1	-2
↓		-2	0	2
	$1x^2$	$0x$	-1	0

quotient: $x^2 - 1$ divisor: $(x+2)$

$(x+1)(x-1)(x+2)$

fraction form: $x^2 - 1 + \frac{0}{x+2}$

- p 205 Quick Review 5 through 10 (modeled 9)
- p 205 25 - 26 (Look at the graph) pick x-int → use it for synt. ÷

- p. 205 7 → 12 (synthetic division
  write your answer as:
  Fraction Form: Quotient + $\frac{\text{Remainder}}{\text{divisor}}$)

$22 \div 5$

$= 4 + \frac{2}{5}$

(4 ← Q, 2 ← R, 5 ← D)