5.4 Factor by Grouping

* Double GCF (2 rounds of it!)

$x^3 - 3x^2 - 16x + 48$ ← Group 2 by 2 first 2 & last 2

÷x^2 ×x^2 ÷-16 ×-16

GCF: x^2 GCF: -16

$x^2(x-3) - 16(x-3)$ ← Hey! They have $(x-3)$ in Common

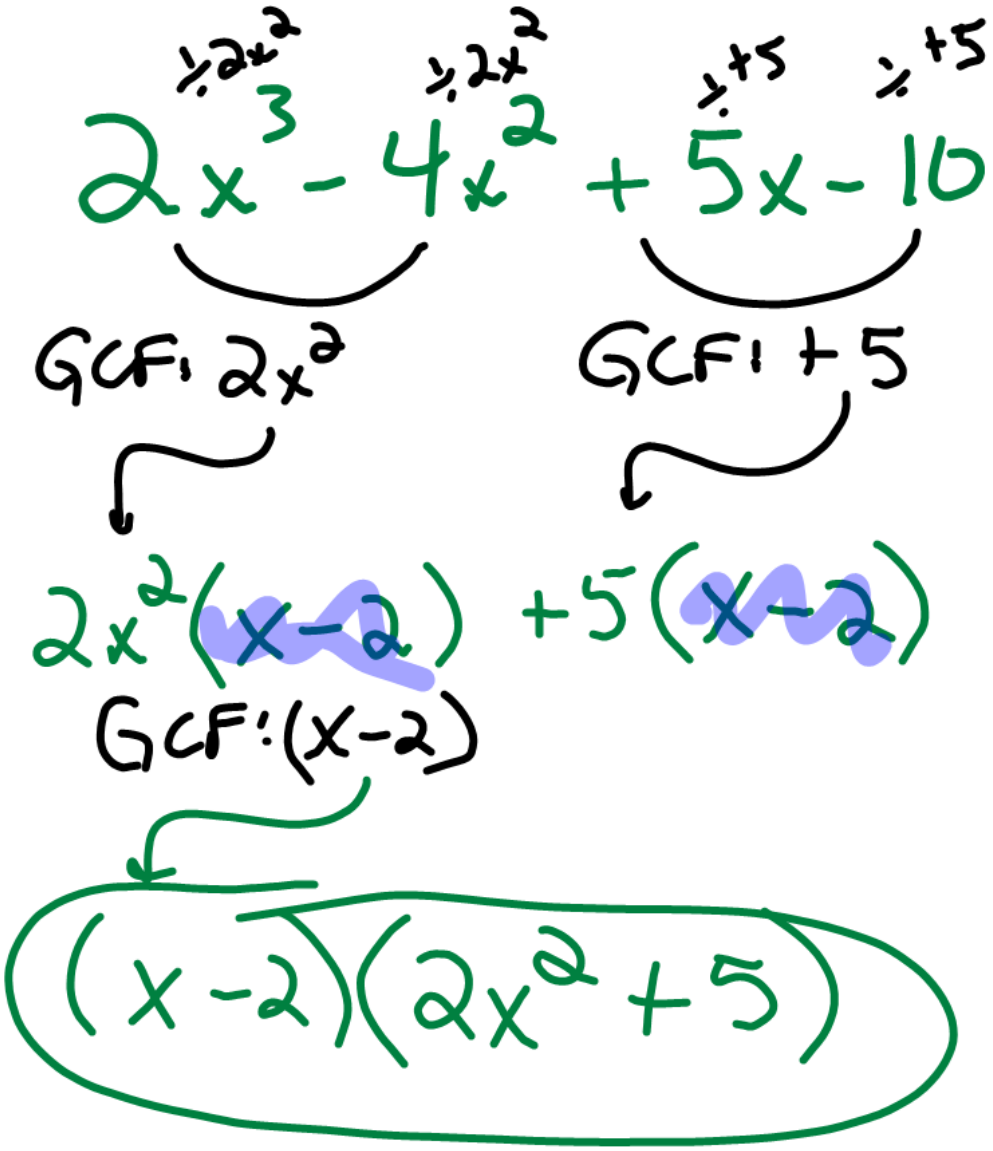
GCF: $(x-3)$

* 2nd round

$(x-3)(x^2-16)$ ← Can we factor x^2-16? $x \cdot x$

$(x-3)(x+4)(x-4)$

$(x+4)(x-4)$


÷2x²
÷2x²
÷+5
÷+5
2x³ - 4x² + 5x - 10
GCF: 2x²
GCF: +5
2x²(x-2) +5(x-2)
GCF: (x-2)
(x-2)(2x²+5)

Factor Completely

$2p^8 + 10p^5 + 12p^2$ → GCF?

How break up:

$p^{10} = p \; p$

$p^{22} = p \; p$

$p^{100} = p \; p$