10.5 Expanded and Factored form

Quadratics

$y = ax^2 + bx + c$ Standard form

$y = (x-h)^2 + k$ Vertex form

Expand

- multiply by distribution or FOIL

$y = x(x+5) = x^2 + 5x$

$y = -x(5-x) = -5x + x^2$ or $x^2 - 5x$

FOIL

$(x-2)(x+3)$

$x^2 + 3x - 2x - 6$

$x^2 + x - 6$

$y = 5x(x^4 + 3x^2)$

$= 5x^5 + 15x^3$

Factor

- Create parenthesis
- take out side whatever is common to both terms

$y = x^2 + 5x$

$y = x(x+5)$

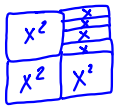
$y = 4x^3 + 8x^2 + 2x$

$y = 2x(2x^2 + 4x + 1)$

$y = -2x^2y^3 + 4x^4y^2$

$y = 2x^2y^2(-y^3 + 2x^2)$

x-tiles



$3x^2 + 4x$

$x(3x+4)$

x-intercepts (0's of a function)

$y = 3x^2 + 9x$ Change $y = 0$

$0 = 3x^2 + 9x$ factor if possible

$0 = 3x(x+3)$ set equal to zero

$3x = 0$ $x+3=0$ solutions are the x-intercepts

$x = 0$ $x = -3$

y intercepts (found when $x = 0$)

$y = 3x^2 + 9x$

$y = 3(0)^2 + 9(0) = 0$

$y = ax^2 + bx + c$ ←

c - constant
term without a variable