Mathematics 10D

3.4 – Expanding Quadratic Expressions

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Expand means to multiply. The end result should be that no brackets exist.

FOIL

ex: $(x-3)(x+9) \Rightarrow x(x-3)+9(x-3)$

$= x^2+9x-3x-27$

$= x^2+6x-27$

$= x^2-3x+9x-27$

$= x^2+6x-27$

ex: $(2x+4)(3x-8)$

$= 6x^2-16x+12x-32$

$= 6x^2-4x-32$

ex $4(x+2)(3x-1)$

$= 4(3x^2 - 1x + 6x - 2) = 4(3x^2 + 5x - 2)$

$= 12x^2 + 20x - 8$

ex: $2(x-4)^2$ $(x-4)$

Perfect Square

$= 2(x^2 - 4x - 4x + 16)$

$= 2x^2 - 16x + 32$

ex: $(x+8)(x-8)$ Difference of Squares

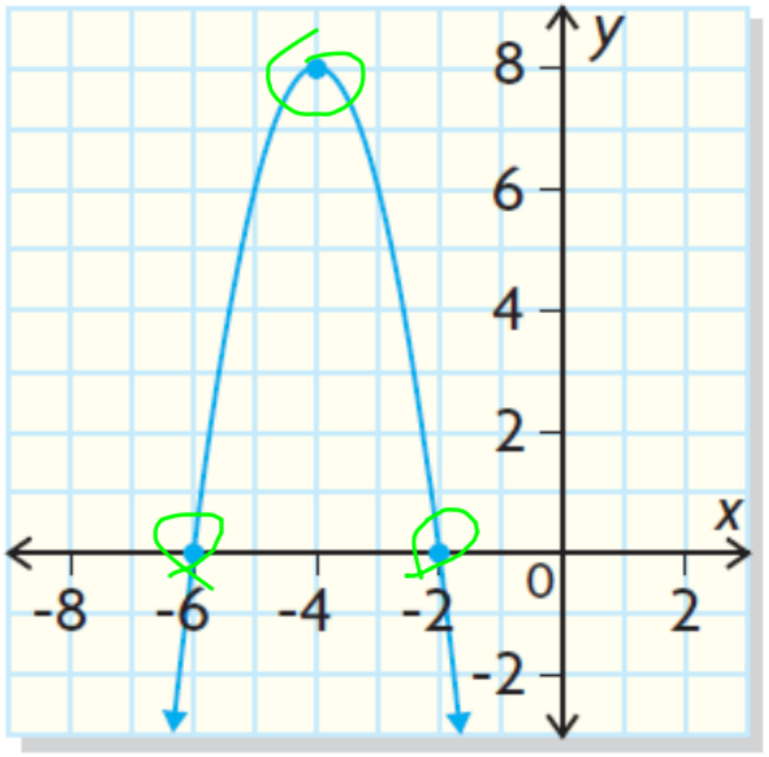
$= x^2 - 8x + 8x - 64 = x^2 - 64$

ex. $(x-2)(x+3) - (x+5)^2$

$= x^2 + 3x - 2x - 6 - (x^2 + 10x + 25)$

$= -9x - 31$

Write the equation of this parabola in Standard Form.



$y = ax^2 + bx + c$

$y = a(x - r)(x - s)$

$8 = a(-4 + 6)(-4 + 2)$

$8 = a(2)(-2)$

$8 = a(-4)$

$-2 = a$

$\therefore y = -2(x + 6)(x + 2)$

$y = -2(x^2 + 2x + 6x + 12)$

$y = -2x^2 - 16x - 24$

y-int