

Unit 5-7: Transformations w/ Quadratic Functions
 Pg 305 Vertex Form: $y = a(x-h)^2 + k$

Ex #1a) $y = x^2 + 6x - 5$
 $(x^2 + 6x + 9) - 5 - 9$ step #1 = $\frac{b}{2} = 3$
 step #2 = $(3)^2 = 9 = C$

$y = (x+3)^2 - 14$
 b) $y = -2x^2 + 8x - 3$
 $(-2x^2 + 8x + C) - 3$
 $-2(x^2 - 4x + C) - 3$
 $-2(x^2 - 4x + 4) - 3 - (-8)$
 $-2(x-2)^2 + 5$

1b) $y = 2x^2 - 12x + 17$
 $2(x^2 - 6x + C) + 17$
 $2(x - 6x + 9) + 17 - (2)(9)$
 $2(x-3)^2 - 1$
 $y = 2(x-3)^2 - 1$
 2) $y = a(x+1)^2 - 2$
 $13 = a(-4+1)^2 - 2$
 $13 = a(-3)^2 - 2$
 $13 = 9a - 2$
 $15 = 9a$
 $\frac{15}{9} = \frac{9a}{9}$
 $\frac{5}{3} = a$
 $y = \frac{5}{3}(x+1)^2 - 2$

Ex #2: $y = a(x-3)^2 + 2$
 $-2 = a(-1-3)^2 + 2$
 $-2 = a(-4)^2 + 2$
 $-2 = 16a + 2$
 $-4 = 16a$
 $-\frac{4}{16} = \frac{16a}{16}$
 $-\frac{1}{4} = a$
 $y = -\frac{1}{4}(x-3)^2 + 2$
 3a) $y = (x-3)^2 - 2$
 $y = 4(x-2)^2 - 56$

Ex #3: $y = 4x^2 - 16x - 40$
 $C = \frac{-b}{2} = -\frac{-16}{2} = 8$
 $4(x^2 - 4x + C) - 40$
 $4(x^2 - 4x + 4) - 40 - (4)(4)$
 $4(x-2)^2 - 56$

Unit 5-7: Transformations w/ Quadratic Function

Pg 305

Vertex Form: $y = a(x-h)^2 + k$

EX #1a)

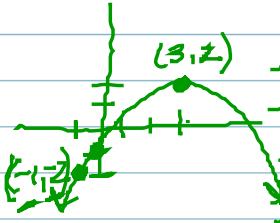
$y = x^2 + 6x - 5$
 $(x^2 + 6x + C) - 5$ step #1: $\frac{b}{2} = 3$
 $y = (x^2 + 6x + 9) - 5 - 9$ step #2: $(3)^2 = 9 = C$

$y = (x+3)^2 - 14$ b) $y = -2x^2 + 8x - 3$

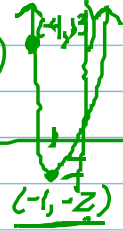
1B) $y = 2x^2 - 12x + 17$
 $(2x^2 - 12x + C) + 17$
 $2(x^2 - 6x + C) + 17$
 $2(x^2 - 6x + 9) + 17 - (2)(9)$
 $y = 2(x-3)^2 - 1$

$y = (-2x^2 + 8x + C) - 3$
 $-2(x^2 - 4x + C) - 3$
 $-2(x^2 - 4x + 4) - 3 - (-2)(4)$
 $y = -2(x-2)^2 + 5$

EX #2:



$y = a(x-3)^2 + 2$
 $-2 = a(-1-3)^2 + 2$
 $-2 = a(-4)^2 + 2$
 $-2 = 16a + 2$



$y = a(x+1)^2 - 2$
 $3 = a(-4+1)^2 - 2$
 $3 = a(-3)^2 - 2$
 $3 = 9a - 2$

$y = -\frac{1}{4}(x-3)^2 + 2$

$16 = 16a$
 $-\frac{1}{4} = a$

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

$y = \frac{5}{3}(x+1)^2 - 2$

EX #3: $y = 4x^2 - 16x - 40$

$C = -\frac{b}{2} = -\frac{-16}{2} = 8$
 $(4x^2 - 16x + C) - 40$
 $4(x^2 - 4x + C) - 40$
 $4(x^2 - 4x + 4) - 40 - (4)(4)$

