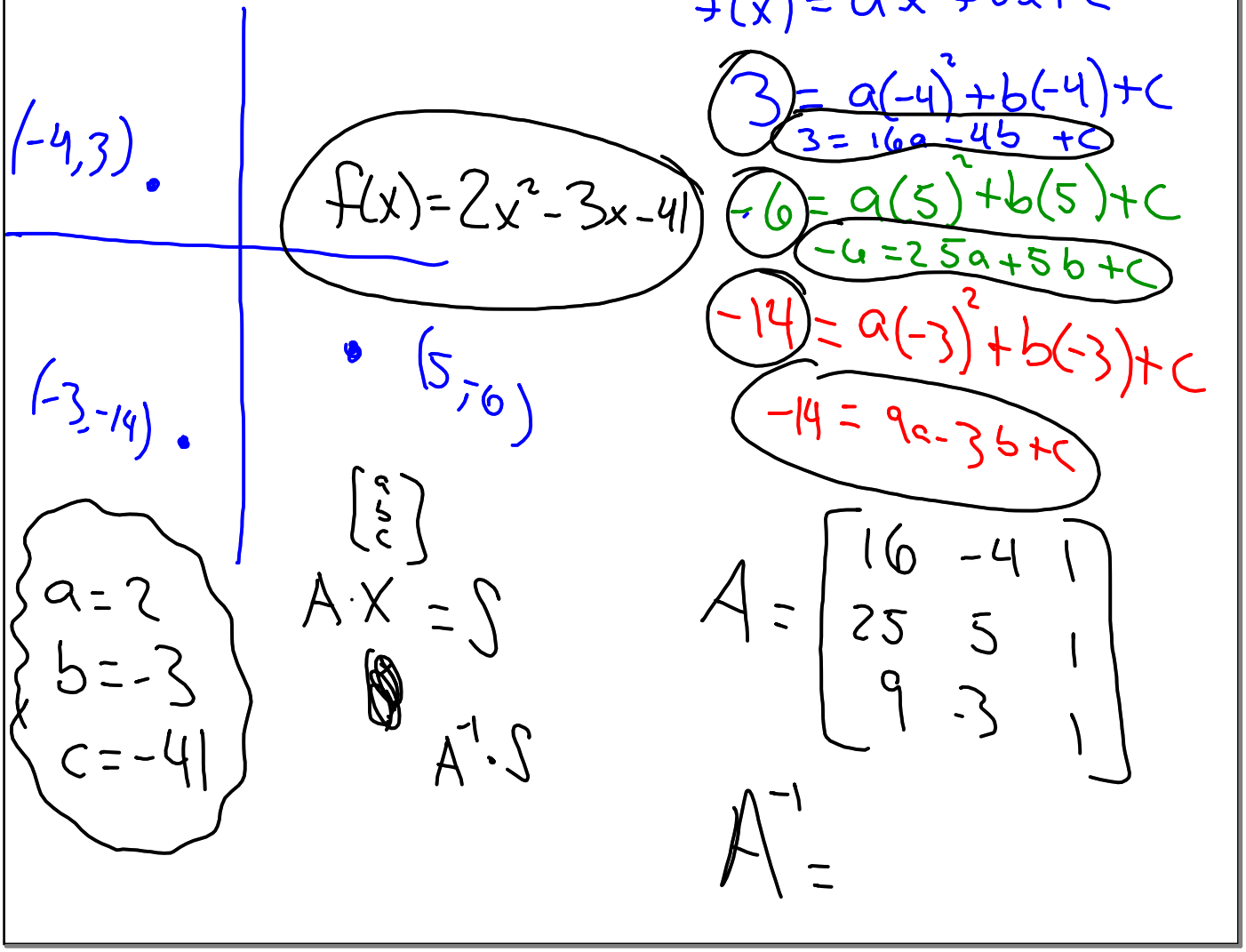
HAT

9/21/17

Connecting The Forms

Write the equation of the parabola that passes through
(-4, 3), (5, -6) and (-3, -14)



Warm Up: Sketch the graph of

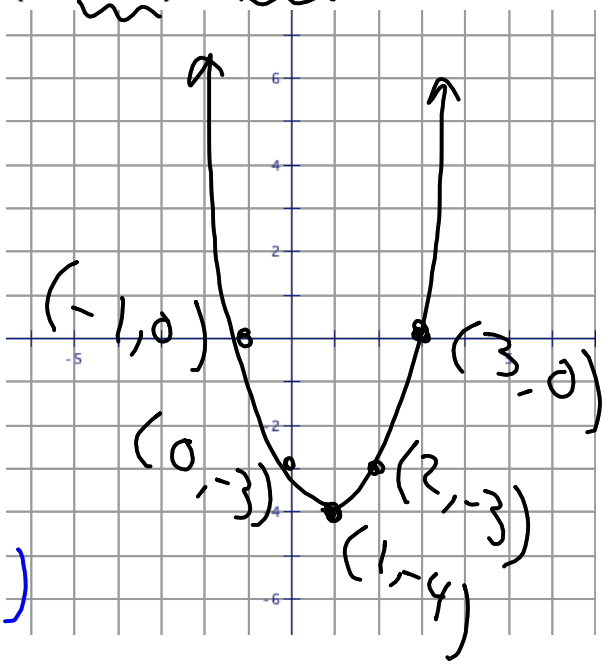
Vertex Form $\longrightarrow f(x) = (x-1)^2 - 4$

$f(x) = (x-1)^2 - 4$

Standard Form $= x^2 - 2x + 1 - 4$

$f(x) = x^2 - 2x - 3$ (0, c) y-int

$= x^2 - 2x - 3$



$f(x) = (x-3)(x+1)$

Factored Form

x-int / zeros / roots

Write the function in standard form and factor. What key features of the graph do you see in this form?

3 Forms:

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

(h, k)

Standard Form: $f(x) = ax^2 + bx + c$

y-int = $(0, c)$

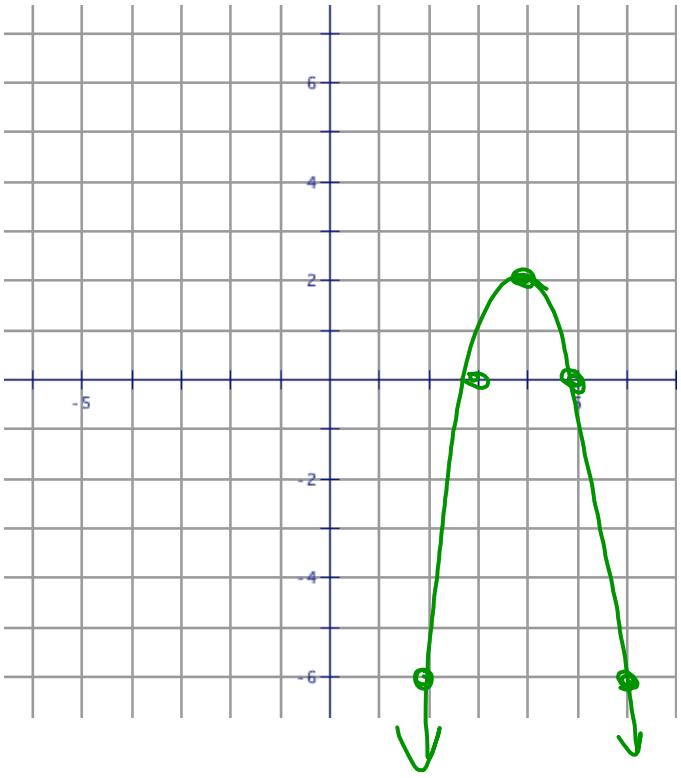
Amplitude

Factored Form: $f(x) = a(x-p)(x-q)$

$(p, 0)$ $(q, 0)$

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

$a = -2$ (4, 2)



Write the equation of the parabola that has a maximum of (5,8) and has a y-intercept of (0,-4.5)

$f(x) = a(x-5)^2 + 8$

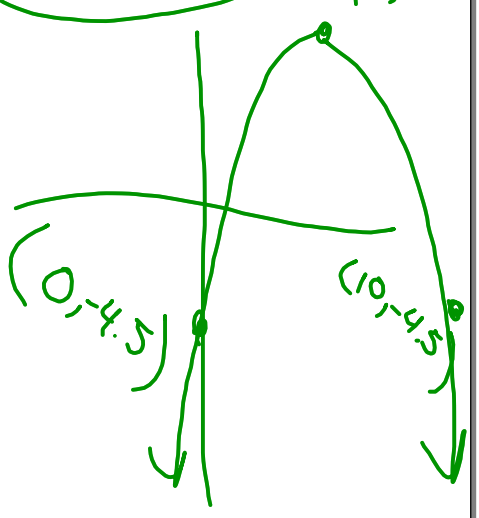
$-4.5 = a(0-5)^2 + 8$

$-4.5 = 25a + 8$

$\frac{-12.5}{25} = 25a$

$-\frac{1}{2} = a$

$f(x) = -\frac{1}{2}(x-5)^2 + 8$



Ex#3: Write ~~the~~ an equation of a quadratic function in standard form that has x-intercepts at $\left(\frac{3}{4}, 0\right)$ and $(-5, 0)$ and $(0, 10)$

$f(x) = a(4x-3)(x+5)$

let $a = 1$

$f(x) = (4x-3)(x+5)$

$= 4x^2 + 20x - 3x - 15$

$f(x) = 4x^2 + 17x - 15$

$x = \frac{3}{4}$

$4x = 3$

$4x - 3 = 0$

$x = -5$

$x + 5 = 0$

Write the equation of the parabola with x-intercepts at (-3, 0) and (2,0) that passes through the point (1,-12).

$$f(x) = a(x+3)(x-2)$$

$$-12 = a(1+3)(1-2)$$

$$-12 = a \cdot 4 \cdot -1$$

$$3 = a$$

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

September 21, 2017