October 23, 2015

#10) $6x^2 + 12x + y + 13 = 0$

$y = ax^2 + bx + c$ Convert to Vertex Form $f(x) = a(x-h)^2 + k$

Vertex: (h, k)

$y = -6x^2 - 12x - 13$

$= -6(x^2 + 2x + \frac{13}{6})$

Goodrae's way

$-6\left[(x^2 + 2x = -\frac{13}{6})\right]$

$a \quad 2 \cdot \frac{1}{2} = 1$

$b \quad (1)^2 = 1$ add to both sides

$-6\left[(x^2 + 2x + 1 = -\frac{13}{6} + \frac{1}{1})\right]$

$-6\left[(x+1)^2 = \frac{-13+6}{6} = \frac{-7}{6}\right]$

$-6\left[(x+1)^2 + \frac{7}{6}\right]$

$-6(x+1)^2 - \frac{42}{6}$

$y = -6(x+1)^2 - 7$

$f(x) = -6(x+1)^2 - 7$ Vertex: $(-1, -7)$

Oct 23-11:01 AM

Alternate Vertex

$\left(-\frac{b}{2a}, f\left(-\frac{b}{2a}\right)\right) = (-1, -7)$

$y = -6x^2 - 12x - 13$

$-\frac{b}{2a} = -\frac{(-12)}{2(-6)} = -\frac{-12}{-12} = -1$

$f(-1) = -6(-1)^2 - 12(-1) - 13$

$= -6(1) + 12 - 13$

$= -6 + 12 - 13$

$= 6 - 13$

$= -7$

Oct 23-11:12 AM

#9) $2\left[\frac{1}{2}(y+4) = (x-7)^2\right]$

$y + 4 = 2(x-7)^2$

$y = 2(x-7)^2 - 4$

Vertex: $(7, -4)$

Oct 23-11:19 AM

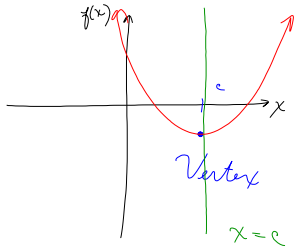
$\frac{1}{2}(y+4) = (x-7)^2$

$\frac{y}{2} + 2 = (x-7)^2$

$2\left(\frac{y}{2} = (x-7)^2 - 2\right)$

$y = 2(x-7)^2 - 4$

Oct 23-11:22 AM



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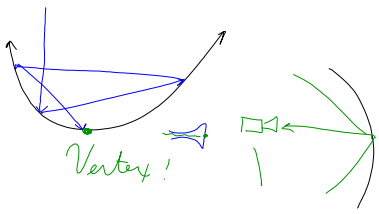

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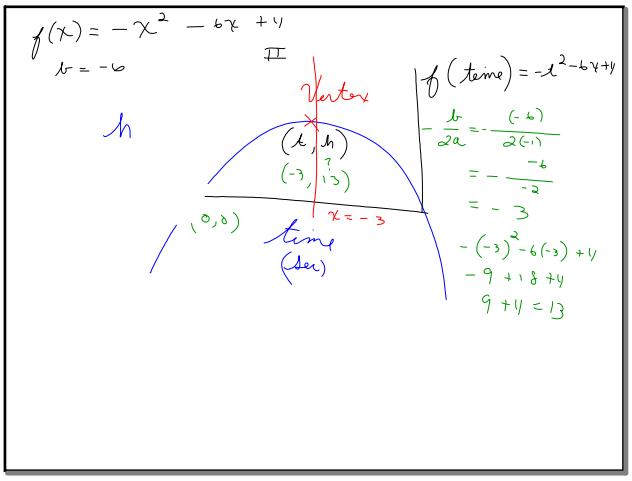

Oct 23-11:37 AM