

Converting Between Forms

Standard $\Rightarrow y = ax^2 + bx + \textcircled{c}$ $\textcircled{c}$ - y-int

Vertex $\Rightarrow y = a(x-h)^2 + k$ (h, k) vertex

Zeros $\Rightarrow y = a(x-s)(x-t)$ s and t are the zeros.

a is always the same, it tells us the direction of opening.

Vertex $y = 3(x-3)^2 + 5$
Zeros: $y = 2(x-3)(x+4)$ $\Rightarrow$ Standard: How? Expand

Standard $\rightarrow$ Zeros? factor

Standard $\rightarrow$ Vertex? complete the square

Zeros $\rightarrow$ vertex? ex. $y = \frac{a}{2}(x-4)(x+2)$

Zeros: 4 and -2

A.O.S: $x = \frac{4+(-2)}{2} = 1$

plug in $x=1$: $y = 2(1-4)(1+2)$

$y = 2(-3)(3)$

$y = -18$ v. $\left(\underset{h}{1}, \underset{k}{-18} \right)$

$\rightarrow y = a(x-h)^2 + k$
 $y = 2(x-1)^2 - 18$

Vertex $\rightarrow$ zeros? convert to standard then factor.