

VERTEX FORM

quadratic

$$a (bx - h)^2 + k$$

OUTSIDE: Tou+h

INSIDE: Lies

a:	b:
a > 1: vertical stretch/narrow	b > 1: horiz. compress/widen
0 < a < 1: vertical compress/widen	0 < b < 1: horiz. stretch/narrow
-a: reflect of x-axis	-b: reflect of y-axis
k: +k: UP -k: Down	h: +h: left -h: right

EX. STATE THE TRANSFORMATION

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

— Vert. stretch

— Right 4

2. $f(x) = (2x - 8)^2 + 2$

— UP 2

— Right 8

— Horiz. width



VERTEX FORM

THIS EQUATION GIVES YOU THE
vertex

$$a (\underline{bx} - h)^2 + k$$

VERTEX: $(\frac{\text{opposite } h}{\quad}, \frac{k}{\quad})$

EX. STATE THE VERTEX

$$1. f(x) = (x + 3)^2 - 3$$

(opp. h, k)

$(-3, -3)$

$$2. f(x) = (x - 6)^2$$

(opp. h, k)

$(6, 0)$

VERTEX FORM

THIS EQUATION ALSO GIVES YOU THE
axis of symmetry

$$a (\underline{bx} - h)^2 + k$$

AXIS OF SYM: $X = \underline{\text{opp. } h}$

EX. STATE THE AXIS OF SYMMETRY

1. $f(x) = 3(x + 2)^2 - 2$

$x = -2$
opp.
h

2. $f(x) = x^2 + 2$

no parentheses
 $x = 0$