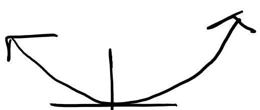
Graphing quadratics – vertex form / graphing form.

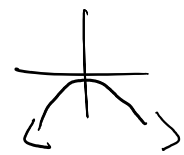
Tuesday, August 22, 2017 10:34 AM

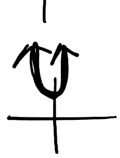
A. $y = ax^{2}$ ← quadratic

Coefficient on x^2 determins shape/concavity.



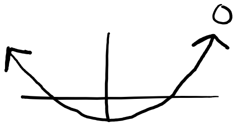
$a > 0$ up $a < 0$ down



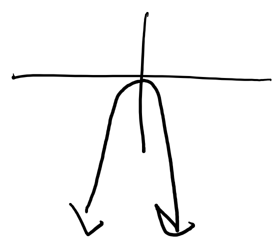


$|a| > 1$ → skinny; vertical stretch

$0 < |a| < 1$ → fat ; vertical compression



$y = -3x^2$



Sketch.

B. Vertex. (h, k) Starting point of parabola.

graphing form:

$$y = a(x-h)^2 + k.$$

Vertex: (h, k)

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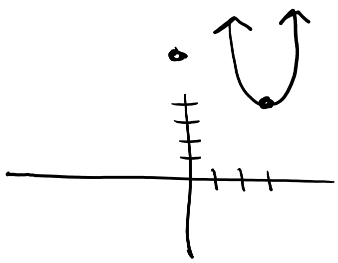
a is the coefficient

determines shape/concavity.

* the h value is opposite sign from the value inside parenthesis with x.

Ex: $y = 1(x-3)^2+4$



- describe. concave/shape standard, up
- vertex.

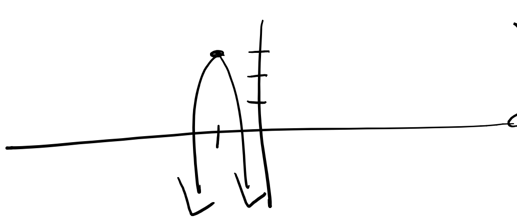
$(3, 4)$

- minimum value, min $= 4$
- Range: $y \geq 4$
- Domain: $\mathbb{R}$ * true for whole unit.

Ex: $g(x) = -2(x+1)^2 + 3$

$a = -2$ down/skinny

Vertex $(-1, 3)$



D: $\mathbb{R}$

Range $\underline{\underline{y \leq 3}}$

max value @ 3.

Hiddens:

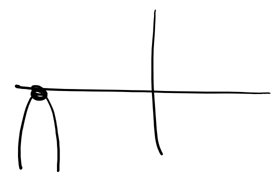
$$Y = 1(x+0)^2 + 0$$

Ex: $h(x) = -5(x+6)^2$

Range: $y \le 0$ Vertex $(-6,0)$

Domain $\mathbb{R}$ down/skinny

max, $y=0$



Ex $p(x) = -3x^2$

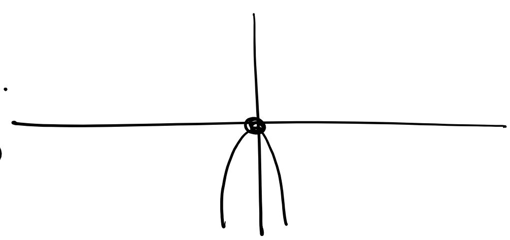
Vertex $(0,0)$

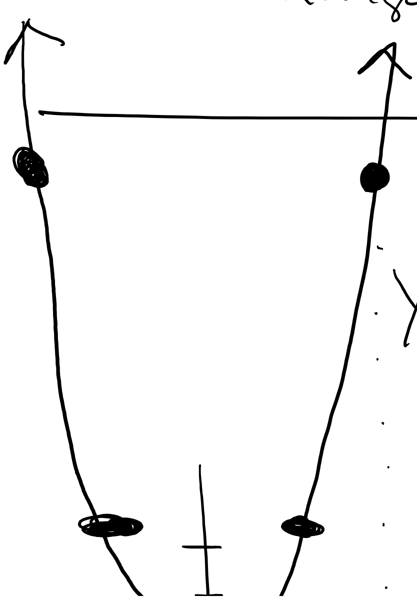
down / skinny

Domain: $\mathbb{R}$

max value @ 0.

Range: $y \le 0$

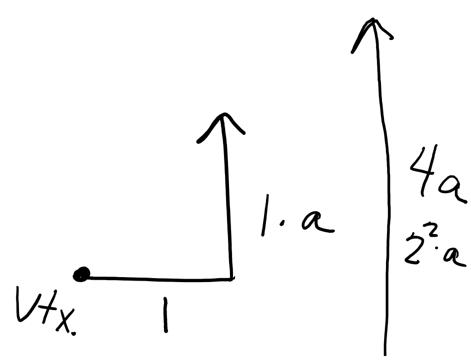


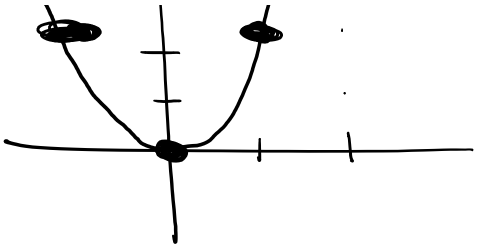


$$Y = 2x^2$$

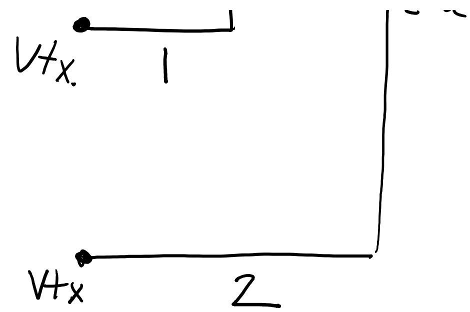
detail.

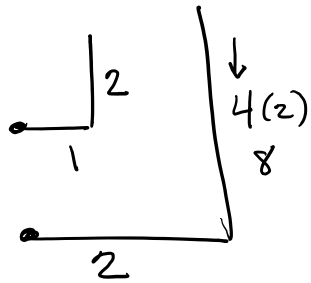
Vertex $(0,0)$





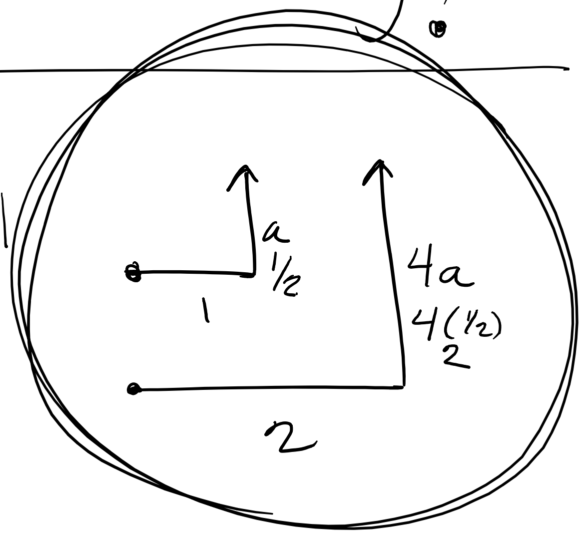
Vertex $(0,0)$



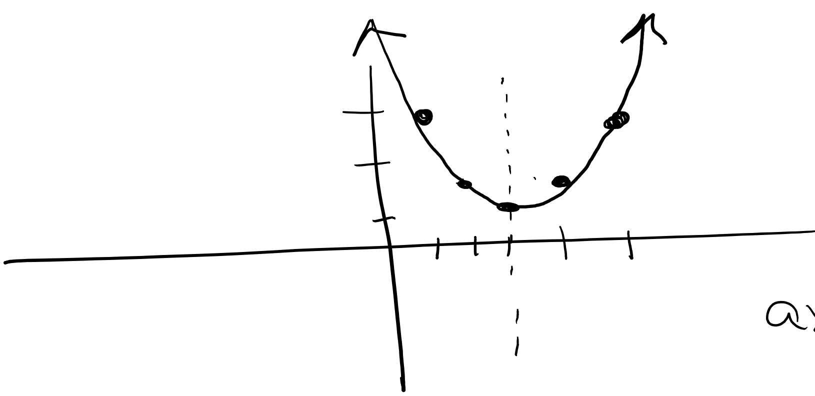


Key!

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



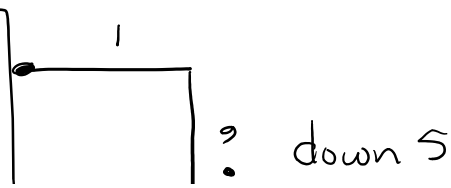
Vtx: $(3,1)$



axis $x=3$

1. Vertex $(-1,4)$

$$\boxed{y = -5(x+1)^2 + 4}$$



$$\boxed{y = -5(x+1)^2 + 4}$$

- down 5
  $a = -5$