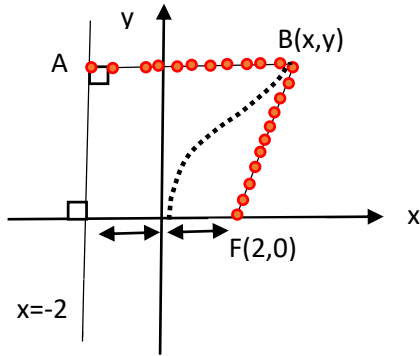


## Parabola Definition



Parabola equation.

F is the focus .

$x = -2$  , is the guide line

$$AB = x + 2$$

$$(AB)^2 = (x+2)^2 \qquad (BF)^2 = (x-2)^2 + y^2$$

$$AB = BF$$

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

$$x^2 + 4x + 4 = x^2 - 4x + 4 + y^2$$

$$4x + 4x = y^2$$

$$y^2 = 8x \Rightarrow y = +\sqrt{8x}$$

Generally:

The Guide line is  $x = -\frac{p}{2}$

The focus is  $F\left(\frac{p}{2}, 0\right)$

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

$$y^2 = 2px$$

example

$$y^2 = 4x$$

$$x \geq 0$$

$$y^2 = -8x$$

$$x \leq 0$$