

## Vertex of a Parabola

$$15/ y = -2x^2 + 12x - 14$$

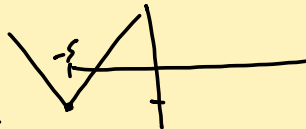
$$\text{Vertex: } x = -\frac{b}{2a} = \frac{-12}{2(-2)} = 3$$

$$y = \text{sub in } x$$

$$y = -2(3)^2 + 12(3) - 14 = 4$$

Vertex  
(3, 4)

0	0
1	4 - 2
2	4 - 8
3	4 - 18



$$19/ \begin{aligned} f(x) &= |x+5| - 2 \\ (x+5) - 2 &= x+3 \\ -(x+5) - 2 &= \\ -x-5-2 &= -x-7 \end{aligned}$$

$$f(x) = \begin{cases} x+3 & x \geq -5 \\ -x-7 & x < -5 \end{cases}$$

$$y = \sqrt{4-x}$$

$$y = \sqrt{-(x-4)}$$

## Holes in a Graph

$$\cancel{x}(x^2+3)\cancel{(x-2)}$$

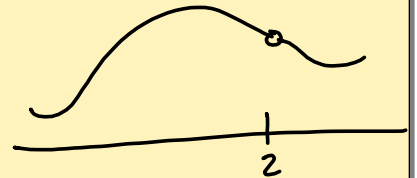
$$x^2(x+4)\cancel{(x-2)}$$

↑ asymptote at  $x=-4$  Holes at  $x=0, 2$

$$x-2=0$$

$$x=2$$

$$x=0$$



Solve a polynomial - Solve using synthetic division.

$$(x^3 + 3x^2 - 6x - 8) = 0 \quad \pm 1 \pm 2 \pm 4 \pm 8$$

$$\begin{array}{r|rrrrr} -1 & 1 & 3 & -6 & -8 & \\ & + & & & & \\ \hline & 1 & 2 & -8 & 0 & \end{array}$$

$$(x+1)(x^2+2x-8)$$

$$(x+1)(x+4)(x-2)$$

$$x = -1, -4, 2$$