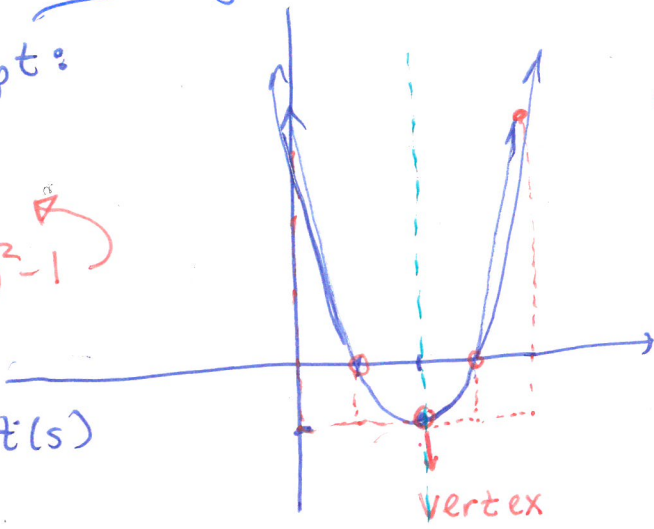


y intercept:
 $x=0$
 $y=3$
 $y=(0-2)^2-1$



Vertex: (2, -1)
 axis of symmetry: x=2

$$y = (x-2)^2 - 1$$

x-intercept(s)
 $y=0$
 $x=3, 1$

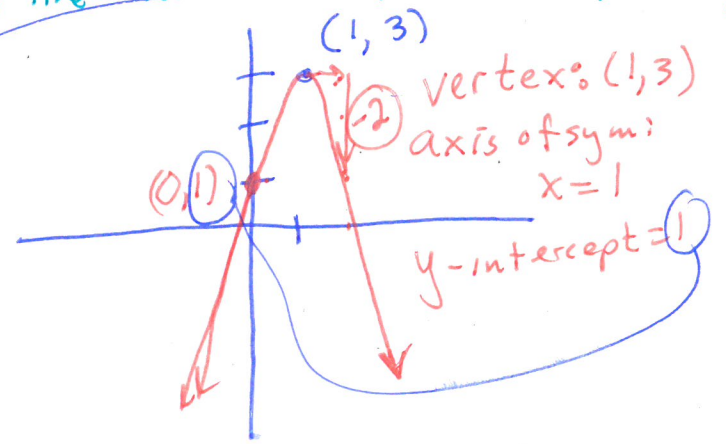
$$(x-2)^2 - 1 = 0$$

$$(x-2)^2 = 1$$

$$x-2 = \pm 1$$

$$x = 2 \pm 1 = 2+1, 2-1 = 3, 1$$

this line includes (2, -1), (2, 0), (2, 1), (2, 2)



$$y = -2(x-1)^2 + 3 = 0$$

$$-2(x-1)^2 = -3$$

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

$$(x-1) = \pm \sqrt{\frac{3}{2}}$$

$$x-1 = \pm \sqrt{\frac{3}{2}} + 1$$

$$x = \pm \sqrt{\frac{3}{2}} + 1$$

≈ 2.22, -0.22

Parabola: $f(x) = x(x-3)$
 $= x^2 - 3x$

$x=0$ $y = 0(0-3) = 0$

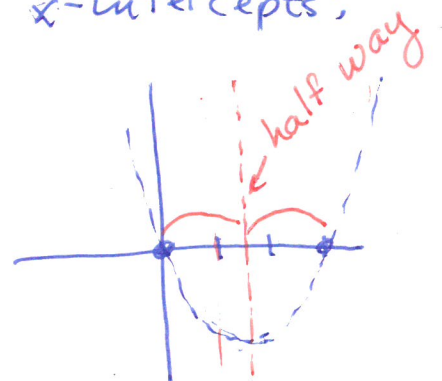
$0 = x(x-3)$
 $\swarrow \quad \searrow$
 $x=0 \quad x=3$

$(1.5)(1.5-3)$
 $(1.5, -2.25)$
 vertex: $(1.5, -\frac{9}{4})$

axis of symmetry:
 $x = 1.5$

← y-intercept: 0

x-intercepts:



average:
 $\frac{0+3}{2} = 1\frac{1}{2}$

Parabola: $f(x) = (x-1)(x-5)$

to get y-intercept:
 plug in $x=0$

$y = (0-1)(0-5) = 5$

to get x-intercepts:

set $y=0$: $0 = (x-1)(x-5)$

$x-1=0$ $x-5=0$
 $x=1$ $x=5$

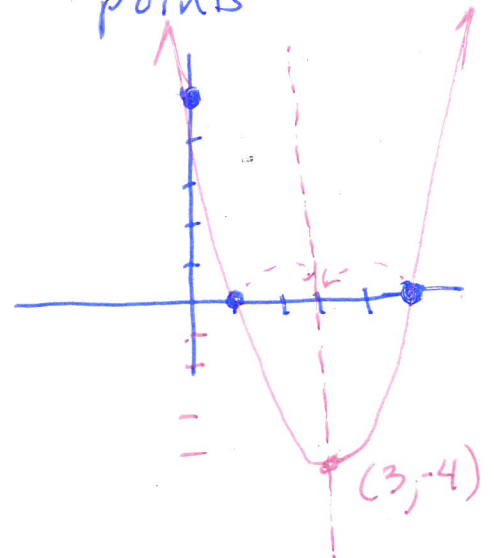
average these for
 axis of symmetry

$x=3$

find vertex by
 plugging in $x=3$

$y = (3-1)(3-5) = 2(-2) = -4$

graph those
 points



Strategy #

Strategy #2

$$y = (x-1)(x-5)$$
$$y = x^2 - x - 5x + 5$$

$$9 + y = \underbrace{x^2 - 6x + 9}_{-9} + 5$$

$$y + 9 = (x-3)^2 - 9 + 5$$

$$y = (x-3)^2 - 4 \quad \text{vertex form}$$

vertex/center $x-3=0$
 $x=3$ $y=-4$

vertex: $(3, -4)$
axis of symmetry
 $x=3$

