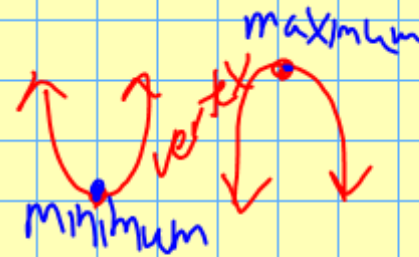
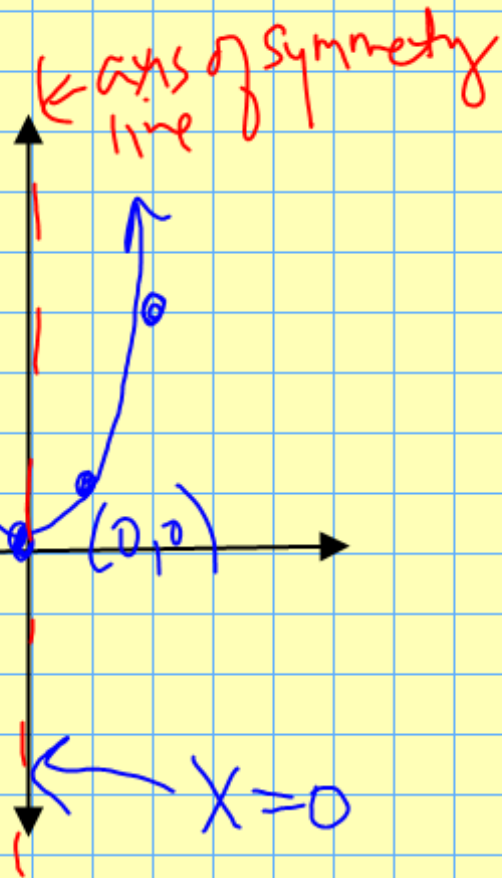


Quiz $ax^2 + bx + c = 0$ ← Put in clicker in this form

Graph Quadratics = parabolas



- ① Vertex
- ② Min/max
- ③ x-intercept(s)
y-intercept
- ④ line of symmetry
- ⑤ Domain
Range



$$y = x^2$$



x	y
-2	4
-1	1
0	0
1	1
2	4

"nice" form for Quadratic

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

vertex (h, k)

$$y = \overset{+}{3}(x-2)^2 + 5$$

vertex $(2, 5)$ min

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

vertex $(-1, -3)$ max

lines

$$y = \overset{\circ}{m}x + \overset{\circ}{b}$$

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

$$y = -2(x-1)^2 + 4 \quad \text{graph}$$

① vertex (1, 4)

② max

③ x-intercepts

$$0 = -2(x-1)^2 + 4$$

$$\frac{-4}{-2} = \frac{-2(x-1)^2}{-2}$$

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

$$\pm\sqrt{2} = x - 1$$

$$1 \pm \sqrt{2} = x \begin{cases} 1 + \sqrt{2} \approx 2.4 \\ 1 - \sqrt{2} \approx -0.4 \end{cases}$$

y-int (let $x=0$)

$$y = -2(0-1)^2 + 4$$

$$y = -2 + 4 = 2$$

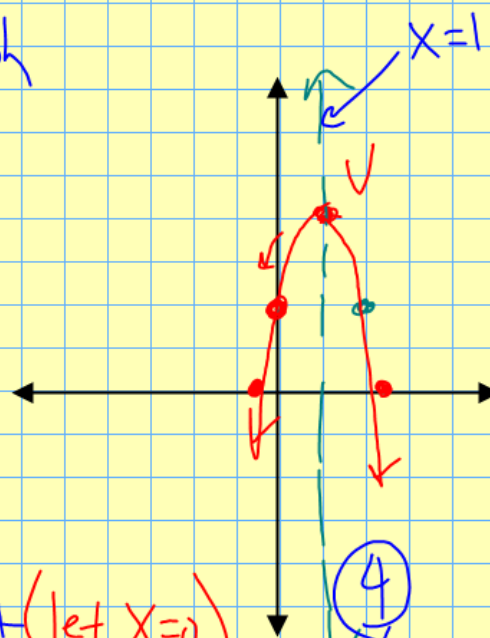
④ Axis (line) of symmetry

⑤ Domain

$$(-\infty, \infty)$$

Range

$$(-\infty, 4]$$



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

① Vertex ^{clicker} $(-4, 1)$

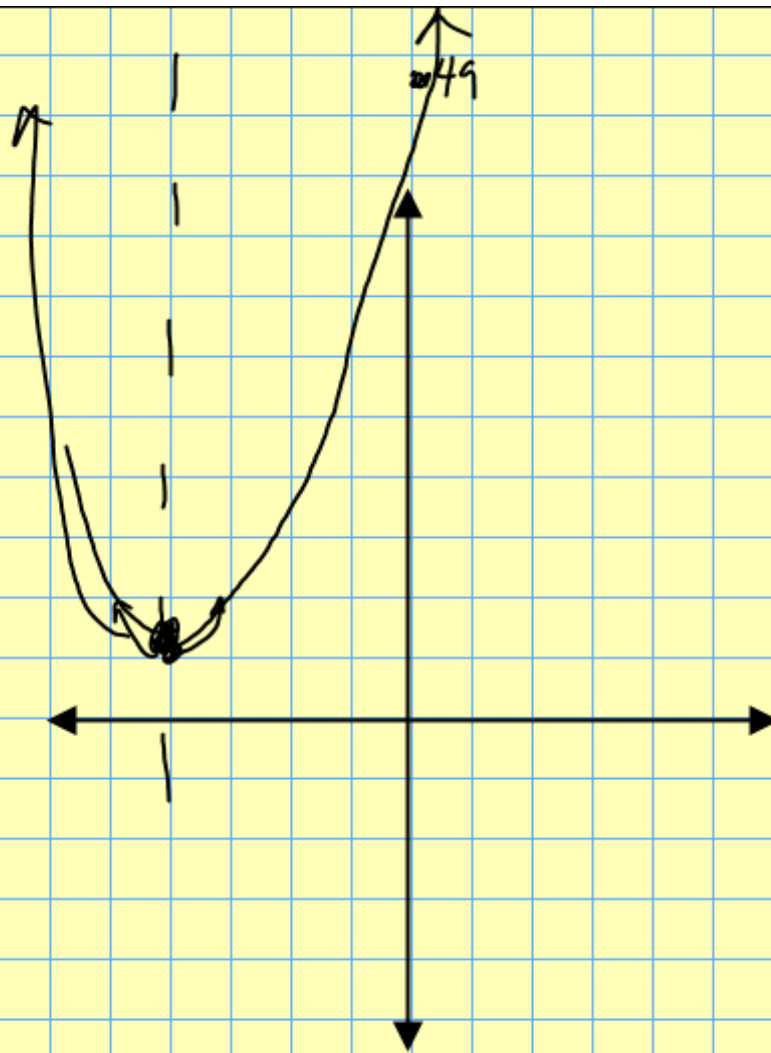
② min/max min

③ X-int none

$$y=17 \quad y = 3(4)^2 + 1 = 49$$

④ axis symm. $x = -4$

⑤ Dom + Range $D(-\infty, \infty)$ $R[1, \infty)$



$$y = x^2 + 2x - 3$$

Complete
the square


$$y + 3 = x^2 + 2x + 1$$

$$y + 4 = (x + 1)^2$$

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

$$y = x^2 + 2x - 3$$

$x = -1$

$V(-1, -4)$ min


version

$$0 = x^2 + 2x - 3$$

$$0 = (x + 3)(x - 1)$$

$$x = -3 \quad x = 1$$

$$0 = (x + 1)^2 - 4$$

$$\pm \sqrt{4} = \sqrt{(x + 1)^2}$$

$$\pm 2 = x + 1$$

$$y = x^2 + 6x - 1$$

$$y + 10 = x^2 + 6x + 9$$

$$y + 10 = (x + 3)^2$$

$$y = (x + 3)^2 - 10$$

① vertex $(-3, -10)$

② min/max min

③ Domain $(-\infty, \infty)$

Range $[-10, \infty)$

B.3 D1

graphing

$$y = kx^2$$

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

B.3 D2

$a \neq 1$

applications

$$\{1 + \sqrt{3}, 1 - \sqrt{3}\}$$

$$X = 1 + \sqrt{3} \quad X = 1 - \sqrt{3}$$

$$X - 1 - \sqrt{3} = 0 \quad X - 1 + \sqrt{3} = 0$$

$$(X - 1 - \sqrt{3})(X - 1 + \sqrt{3})$$

$$X^2 - \underset{-X}{X} + \underset{+\sqrt{3}X}{\sqrt{3}X} + 1 - \sqrt{3}$$

