

1.) Which equation has real, rational, and unequal roots?

(a) $x^2 + 10x + 25 = 0$

(b) $x^2 - 5x + 4 = 0$

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

(d) $x^2 - 2x + 5 = 0$

$(x-4)(x-1) = 0$
 $x=4 \quad x=1$

2.) The roots of the equation $9x^2 + 3x - 4 = 0$ are

(a) imaginary

(b) real, rational, and equal

(c) real, rational, and unequal

(d) real, irrational, and unequal

Zeros $(-0.85385\dots, 0)$
 $(0.5205\dots, 0)$

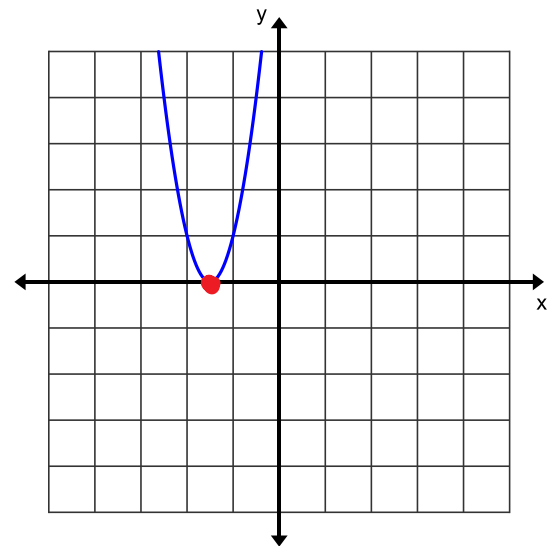
3.) Given the following graph, describe the nature of the roots.

(a) imaginary

(b) real, rational, and equal

(c) real, rational, and unequal

(d) real, irrational, and unequal



4.) The roots of the equation $2x^2 + 4 = 9x$ are

(a) imaginary

(b) real, rational, and equal

(c) real, rational, and unequal

(d) real, irrational, and unequal

$2x^2 - 9x + 4 = 0$

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

$x = \frac{1}{2}$ $x = 4$

5.) Which equation represents a parabola with vertex $(0,0)$ and directrix $y = -1$.

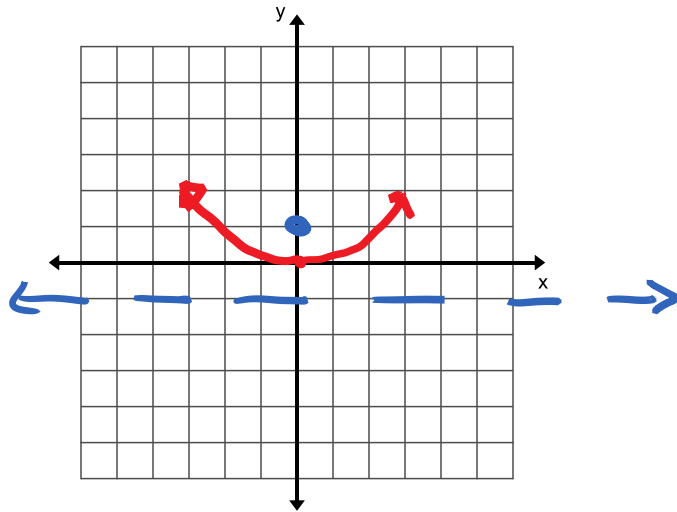
(a) $x^2 = -4y$

(b) $x^2 = 4y$

(c) $y^2 = -4x$

(d) $y^2 = 4x$

$y = \frac{1}{4}x^2$



6.) Which equation represents a parabola with vertex $(0,0)$ and focus $(3,0)$.

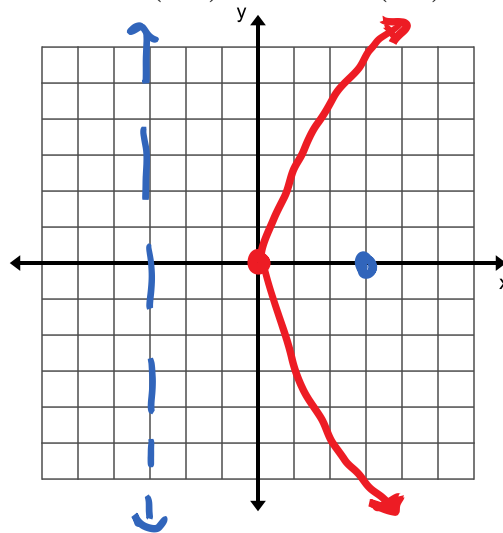
(a) $y^2 = -3x$

(b) $y^2 = 3x$

(c) $y^2 = -12x$

(d) $y^2 = 12x$

$x = \frac{1}{12}y^2$



7.) Which equation represents a parabola with the focus $(-2,0)$ and the directrix $x = 2$.

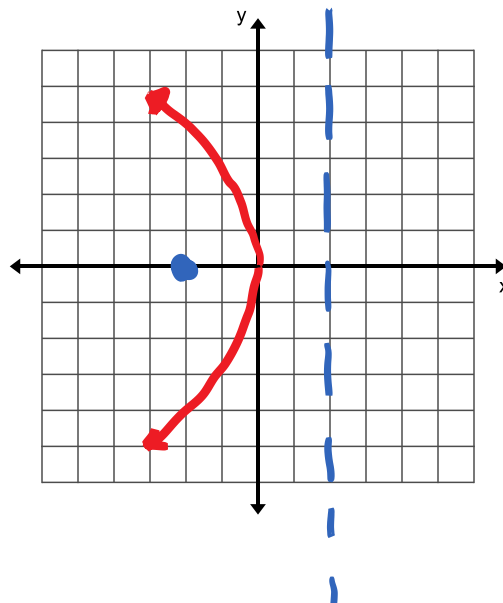
(a) $y^2 = -4x$

(b) $y^2 = 4x$

(c) $y^2 = -8x$

(d) $y^2 = 8x$

$x = -\frac{1}{8}y^2$



8.) Given a parabola with vertex $(1, 2)$ and directrix $x = 4$. The equation of this parabola could be

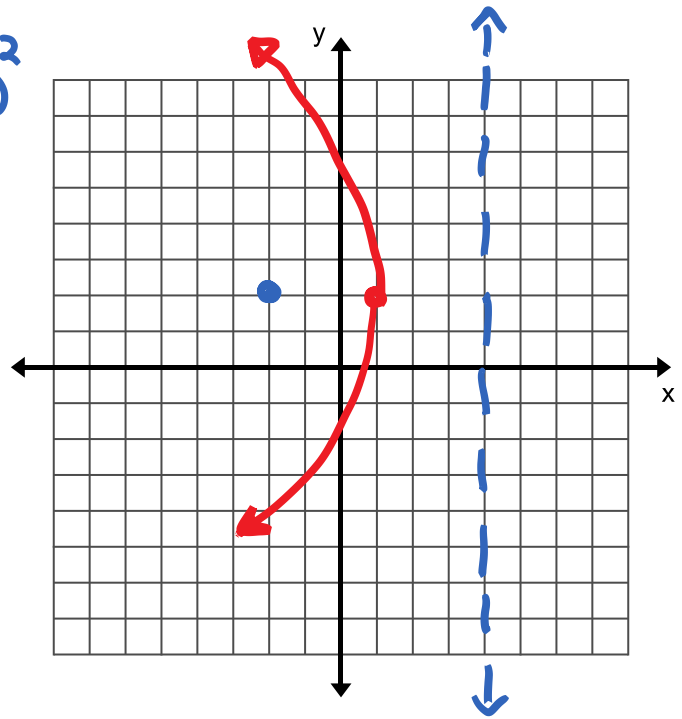
(a) $x - 1 = \frac{1}{-12}(y - 2)^2$

$x - 1 = \frac{1}{-12}(y - 2)^2$

(b) $x - 1 = \frac{1}{12}(y - 2)^2$

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

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



9.) Given a parabola with vertex $(5, -2)$ and focus $(5, 0)$. The equation of this parabola could be

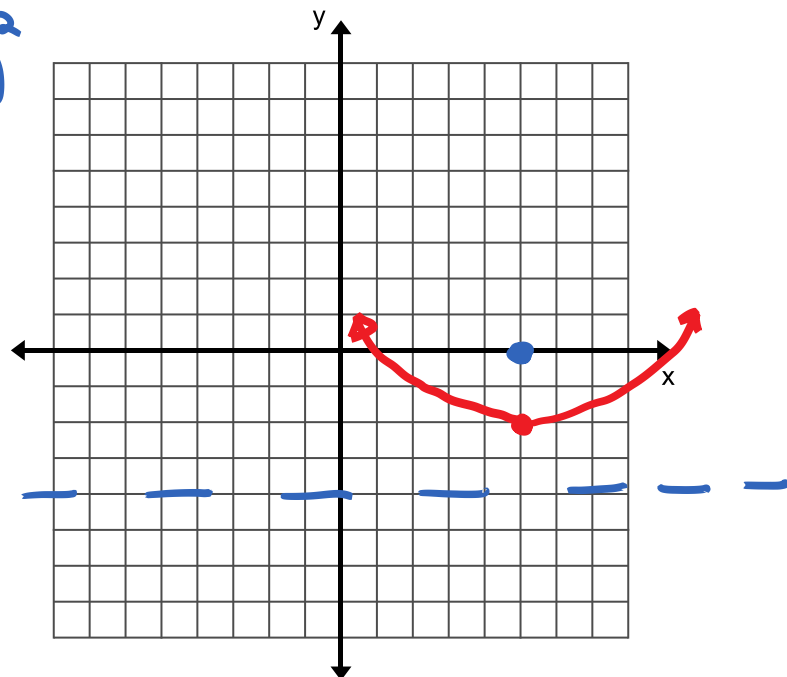
(a) $y = \frac{1}{8}(x - 5)^2 + 2$

$y + 2 = \frac{1}{8}(x - 5)^2$

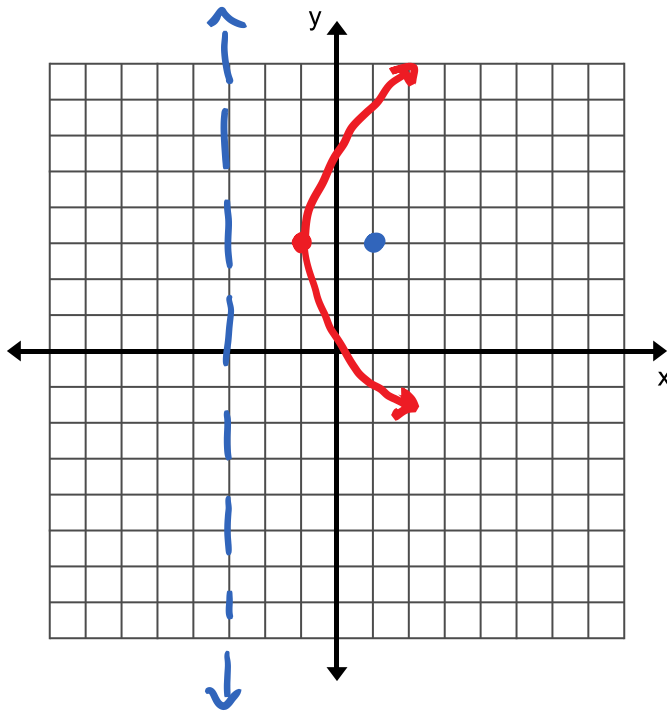
(b) $y = -\frac{1}{8}(x - 5)^2 + 2$

(c) $y = \frac{1}{8}(x - 5)^2 - 2$

(d) $y = \frac{1}{-8}(x + 5)^2 - 2$



10.) Sketch the equation: $8(x+1)=(y-3)^2$. Identify the vertex, focus and directrix of the parabola.



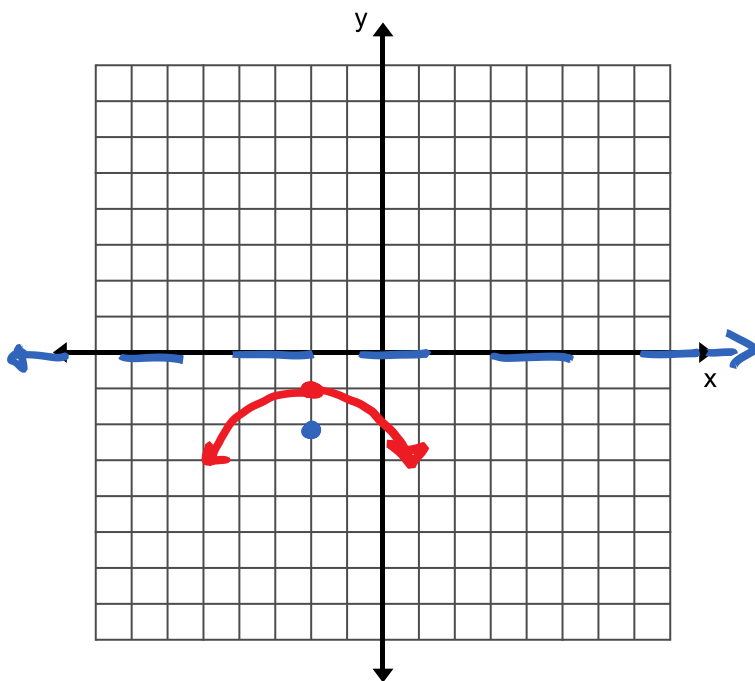
$$x+1 = \frac{1}{8}(y-3)^2$$

Vertex: $(-1, 3)$

Focus: $(1, 3)$

Directrix: $x = -3$

11.) Sketch the equation: $y+1 = -\frac{1}{4}(x+2)^2$. Identify the vertex, focus and directrix of the parabola.



Vertex: $(-2, -1)$

Focus: $(-2, -2)$

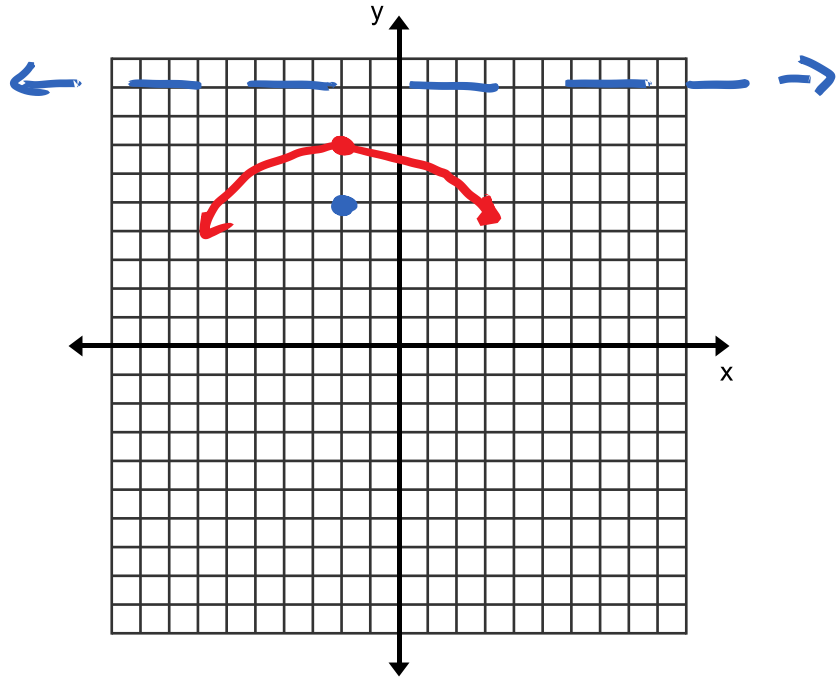
Directrix: $y = 0$

12.) Which equation represents a parabola with a focus of $(-2, 5)$ and a directrix of $y = 9$?

- (a) $(y-7)^2 = 8(x+2)$
- (b) $(y-7)^2 = -8(x+2)$
- (c) $(x+2)^2 = 8(y-7)$
- (d) $(x+2)^2 = -8(y-7)$

Vertex
 $(-2, 7)$

$$y-7 = -\frac{1}{8}(x+2)^2$$



13.) The parabola described by the equation $y = \frac{1}{12}(x-2)^2 + 2$ has the directrix at $y = -1$.

The focus of the parabola is

- (a) $(2, -1)$
- (b) $(2, 2)$
- (c) $(2, 3)$
- (d) $(2, 5)$

$$y-2 = \frac{1}{12}(x-2)^2$$

Vertex: $(2, 2)$

