

**Multiple Choice**

Identify the choice that best completes the statement or answers the question.

C

1. Write the equation of a circle with center  $M(7, -10)$  and radius 2.

A  $(x + 10)^2 + (y - 7)^2 = 4$  C  $(x - 7)^2 + (y + 10)^2 = 4$   
 B  $(x - 7)^2 + (y + 10)^2 = 4$  D  $(x - 7)^2 + (y + 10)^2 = 2$

D

2. Find the center and radius of

$$x^2 + y^2 + 2x - 10y + 10 = 0.$$

A center  $(1, -5)$ ;  $r = 16$  C center  $(-1, 5)$ ;  $r = 16$   
 B center  $(1, -5)$ ;  $r = 4$  D center  $(-1, 5)$ ;  $r = 4$

$$\underline{x^2 + 2x + 1} + y^2 - 10y + 25 = -10 + 1 + 25$$

$$(x + 1)^2 + (y - 5)^2 = 16$$

↑  
 CENTER

$$R = \sqrt{16} = 4$$

D

3. Write the standard equation of a circle with center  $(-3, -4)$  and radius 6.

A  $(x-3)^2 - (y-4)^2 = 6$     C  $(x+3)^2 + (y-4)^2 = 36$

B  $(x-3)^2 + (y-4)^2 = 6$     D  $(x+3)^2 + (y+4)^2 = 36$

A

4. Write the equation in standard form for the parabola with vertex  $(0, 0)$  and directrix  $y = -6$ .

A  $y = \frac{1}{24}x^2$

C  $y = -\frac{1}{24}x^2$      $y = -p$

B  $x = 24y^2$

D  $x = \frac{1}{24}y^2$      $p = 6$

$$x^2 = 4(6)y$$

$$x^2 = 24y$$

$$\frac{1}{24}x^2 = y$$

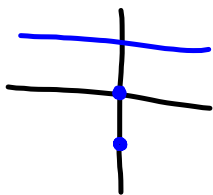
5. Write an equation in standard form for the parabola with focus  $F(0, -6)$  and directrix  $y = 6$

A  $y = \frac{1}{24}x^2$

C  $x = -\frac{1}{24}y^2$   $P = \frac{-6-6}{2} = -6$

B  $x = \frac{1}{24}y^2$

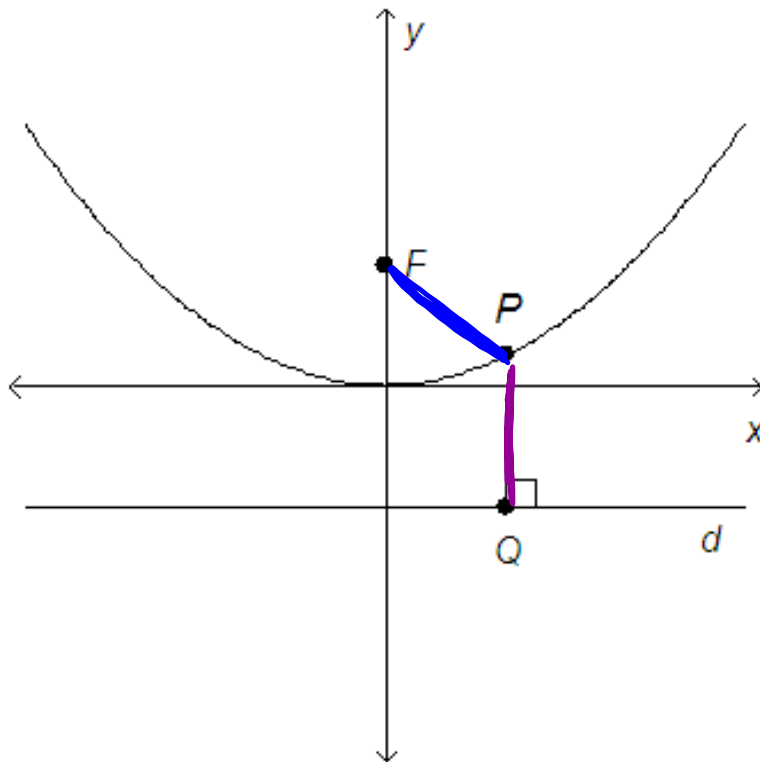
D  $y = -\frac{1}{24}x^2$



$x^2 = 4(-6)y$   
 $x^2 = -24y$   
 $-\frac{1}{24}x^2 = y$

$K + P = -6$   
 $K + (-6) = -6$   
 $K = 0$   
 $V: (0, 0)$

6. In the diagram below,  $F$  is the focus of the parabola, line  $d$  is the directrix, and  $QP \perp d$ . What is the relationship between  $FP$  and  $QP$ ?



A  $FP < QP$

B  $FP = QP$

C  $FP > QP$

D A relationship cannot be determined.

**Short Answer**

1. Find the equation of the circle with center  $(2, -6)$  and radius of 4.

$$\underline{(x-2)^2 + (y+6)^2 = 16}$$

2. Write the equation of the circle in standard form. Identify the radius and center.

$$x^2 + y^2 - 4x + 6y + 9 = 0$$

$$x^2 - 4x + 4 + y^2 + 6y + 9 = -9 + 4 + 9$$

$$\underline{(x-2)^2 + (y+3)^2 = 4} \quad R = \sqrt{4} = 2$$

$$\underline{R=2 \quad C:(2,-3)}$$

3. Write the standard equation of a circle with center  $(-4, -4)$  and radius 4.

$$(x+4)^2 + (y+4)^2 = 16$$

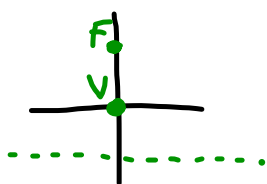
4. Write the standard form of the equation for a parabola with the given focus and vertex at  $(0, 0)$

$(0, 4)$   
 $p = 4$

$$x^2 = 4 \cdot 4y$$

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$$x^2 = 16y$$



5. Write an equation for a parabola with vertex at  $(-4, 3)$  and focus at  $(-4, -2)$ . **VERTICAL**

$(-4, 3)$   $(-4, -2)$   
 $h$   $k$   $h$   $k+p$

$$k+p = -2$$

$$3+p = -2$$

$$p = -5$$

$$(x+4)^2 = -20(y-3)$$

6. A parabola has focus  $(4, 0)$  and directrix  $x = -4$ . **HORIZONTAL**

**Part A:** What is the equation of the parabola?

$$h+p = 4$$

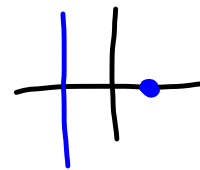
$$h+4 = 4$$

$$h = 0$$

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

$$y^2 = 16x$$

$$p = \frac{4 - (-4)}{2} = 4$$



V:  $(0,0)$

**Part B:** Without graphing, tell the direction in which the parabola opens. How do you know?

The directrix is vertical so

the parabola is horizontal.

Because P is positive, the parabola

is opening to the right.