

PreCalculus
9.1 Quiz Review

Name Key 2017
Date 2/24, 2/27 Block 2B, 1A

Find the standard equation of the circle or parabola.

✓ 1.) $x^2 + y^2 + 6x - 4y = 3$

$$(x^2 + 6x + 9) + (y^2 - 4y + 4) = 3 + 9 + 4$$
$$(x+3)^2 + (y-2)^2 = 16$$

✓ 2.) $y^2 - 12x + 18y + 153 = 0$

$$y^2 + 18y + 81 = 12x - 153 + 81$$
$$(y+9)^2 = 12x - 72$$
$$(y+9)^2 = 12(x-6)$$

✓ 3.) $x^2 + y^2 - 8x - 6y - 39 = 0$

$$(x^2 - 8x + 16) + (y^2 - 6y + 9) = 39 + 25$$
$$(x-4)^2 + (y-3)^2 = 64$$

✓ 4.) $x^2 - 8x - 8y - 40 = 0$

$$x^2 - 8x + 16 = 8y + 40 + 16$$
$$(x-4)^2 = 8y + 56$$
$$(x-4)^2 = 8(y+7)$$

✓ 5.) $x^2 + y^2 - 16x + 20y + 124 = 0$

$$(x^2 - 16x + 64) + (y^2 + 20y + 100) = -124 + 164$$
$$(x-8)^2 + (y+10)^2 = 40$$

✓ 6.) $3x^2 + 30x + y + 79 = 0$

$$x^2 + 10x + 25 = -\frac{1}{3}y - \frac{79}{3} + 25$$
$$(x+5)^2 = -\frac{1}{3}y - \frac{4}{3}$$
$$(x+5)^2 = -\frac{1}{3}(y+4)$$

✓ 7.) $x^2 - 12x + 16y = 28$

$$x^2 - 12x + 36 = -16y + 28 + 36$$
$$(x-6)^2 = -16y + 64$$
$$(x-6)^2 = -16(y-4)$$

✓ 8.) $x^2 + y^2 + 6x - 4y - 15 = 0$

$$(x^2 + 6x + 9) + (y^2 - 4y + 4) = 15 + 13$$
$$(x+3)^2 + (y-2)^2 = 28$$

✓ 9.) $y^2 + 8y + 8x + 16 = 0$

$y^2 + 8y + 16 = -8x - 16 + 16$
 $(y+4)^2 = -8x$

Coordinate of Vertex:

$(0, -4)$

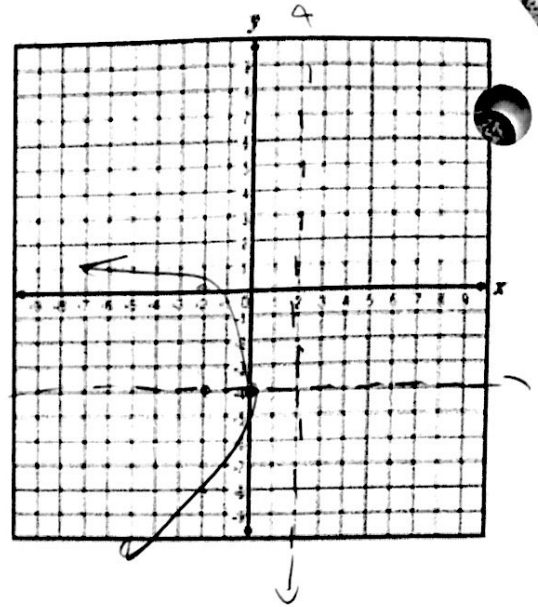
Direction it opens: left

$p = -2$

Axis of Symmetry: $y = -4$

Coordinates of Focus: $(-2, -4)$

Equation of Directrix: $x = 2$



10.) $4x^2 - 40x + 48y + 4 = 0$

$x^2 - 10x + 12y + 1 = 0$
 $x^2 - 10x + 25 = -12y - 1 + 25$
 $(x-5)^2 = -12y + 24$
 $(x-5)^2 = -12(y-2)$

Coordinate of Vertex:

$(5, 2)$

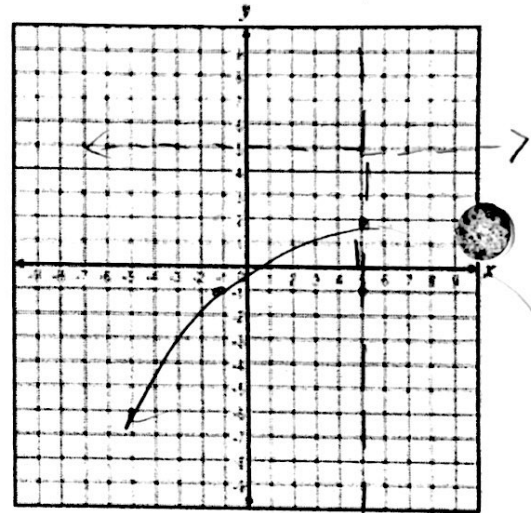
Direction it opens: down

Axis of Symmetry: $x = 5$

Coordinates of Focus: $(5, -1)$

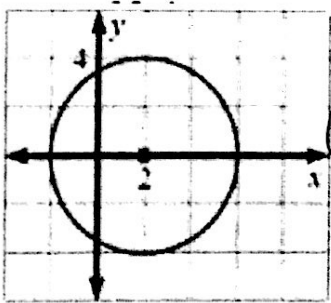
Equation of Directrix: $y = 5$

$p = -3$



Write the equation of the circle.

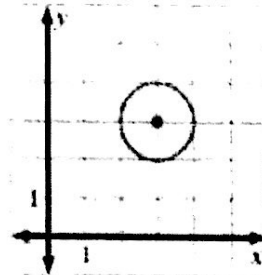
11.)



CTR
 $(2, 0)$
 $r = 4$

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

12.)



CTR
 $(3, 3)$ $r = 1$

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

Write the equation of the circle.

13.) Center: (5, -7) and Point: (13, 8)

$$(x-5)^2 + (y+7)^2 = 289$$

$$r = \sqrt{15^2 + 8^2} = 17$$

$$\text{diameter} = \sqrt{(-16)^2 + (10)^2} = \sqrt{356}$$

14.) Endpoints of Diameter: (-4, 7) and (6, -9) $r = \frac{2\sqrt{89}}{2}$

$$\text{Center} = (1, -1)$$

$$(x-1)^2 + (y+1)^2 = 89$$

Write the equation of parabola.

15.) Focus (4, -5) and directrix: $y = -9$



$(4, -7)$ vertex
 $p = 2$

16.) Vertex: (4, -3) and Focus: (4, 1)

$$(x-4)^2 = 16(y+3)$$



$$(x-4)^2 = 8(y+7)$$

17.) Vertex: (2, 0) passing through (-6, 8) opens horizontally

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

$$64 = 4p(-8)$$

$$4p = -8$$

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

18.) Vertex: (-2, 1) passing through (2, -1) opens vertically

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

$$4^2 = 4p(-2)$$

$$4p = -8$$

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