

11.1 -11.4 Parabolas / 1.9 II Circles Review

On 1 - 3 find the equation of the parabola in standard form.

1. focus (1, 0); directrix $x = -3$
 $(h+p, k)$ $x = h-p$ $x = -\frac{1}{8}y^2 - 1$ $K=0$ $h+p=1$ $-1+p=1$
 $h-p=-3$ $p=+2$

2. focus (0, -3); vertex (-2, -3)
 $x = \frac{1}{8}(y+3)^2 - 2$
X changed $p=2, h=-2, k=-3$

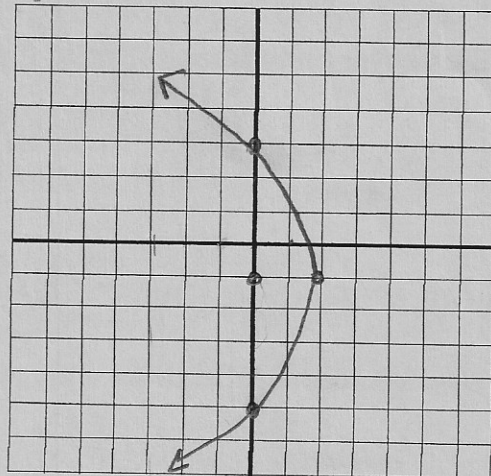
3. vertex (5, 1); directrix $y = 4$
 h k $y = k-p$
 $4 = 1-p$ $p = -3$
 $3 = -p$

Find p , the vertex, focus, directrix and focal diameter of each parabola. Graph the parabola.

4. $y^2 + 2y + 8x - 15 = 0$

$p = -2$
 $v: (2, -1)$
 $f: (0, -1)$
 $d: x = 4$
 $fd: 8$

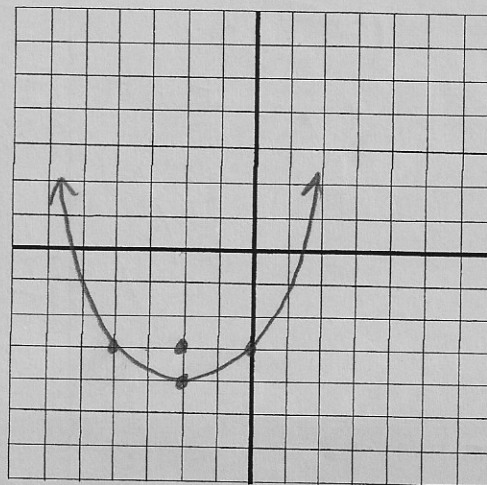
$(y^2 + 2y + 1) - 15 \pm -8x + 15$
 $(y+1)^2 - 16 = -8x$
 $-\frac{1}{8}(y+1)^2 + 2 = x$
 $h=2, k=-1$
 $p = -2$



5. $x^2 + 4x - 4y = 12$

$p = 1$
 $v: (-2, -4)$
 $f: (-2, -3)$
 $d: y = -5$
 $fd: 4$

$x^2 + 4x + 4 = 4y + 12 + 4$
 $(x+2)^2 - 16 = 4y$
 $\frac{1}{4}(x+2)^2 - 4 = y$
 $h = -2, k = -4, p = 1$



6. Find the distance between the points (1, 3) and (4, 7).

$$d = \sqrt{9 + 16} = \sqrt{25} = \boxed{5}$$

7. Find the midpoint of the segment joining the points (6, -1) and (14, 1).

$$\text{mp} \left(\frac{20}{2}, \frac{0}{2} \right) = \boxed{(10, 0)}$$

8. Find the equation of the circle with the center (-2, 1) and radius $4\sqrt{3}$.

$$(x - (-2))^2 + (y - 1)^2 = (4\sqrt{3})^2$$

$$\boxed{(x + 2)^2 + (y - 1)^2 = 48}$$

9. Find the center and radius of the circle with the equation $x^2 + y^2 - 10x - 8y = -16$

$$(x^2 - 10x + \underline{25}) + (y^2 - 8y + \underline{16}) = -16 + \underline{25} + \underline{16}$$

$$(x - 5)^2 + (y - 4)^2 = 25$$

$$\boxed{C(5, 4) \quad r = 5}$$

10. Find the equation of the circle with endpoints of the diameter of (3, 5) and (-7, -11).

$$\text{mp} : \left(\frac{-4}{2}, \frac{-6}{2} \right) = (-2, -3)$$

$$r = \sqrt{25 + 64} = \sqrt{89} = \sqrt{89}$$

$$\boxed{(x + 2)^2 + (y + 3)^2 = 89}$$