

Directions: Circle the name that correctly identifies what type of conic each equation represents.

1. $2x^2 - 8y - 8x + 7 + 2y^2 = -2$ **Circle** Ellipse Hyperbola Parabola

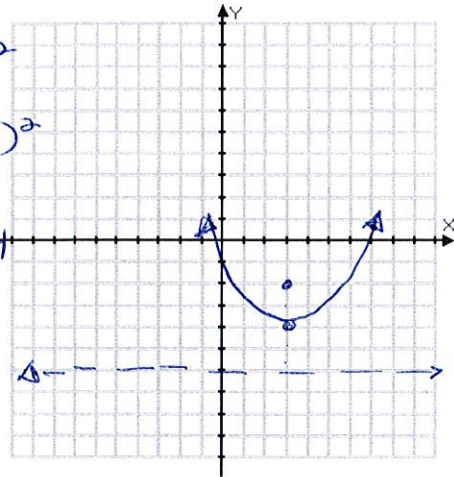
2. $4x^2 + 8x - 25y^2 - 100y = -16$ Circle Ellipse **Hyperbola** Parabola

Graph the following. Then identify the vertex, focus, and directrix.

3. $(x-3)^2 = 8(y+4)$ \rightarrow Same as

Vertex:	$(3, -4)$
Focus:	$(3, -2)$
Directrix:	$y = -6$

$8(y+4) = (x-3)^2$
 $y+4 = \frac{1}{8}(x-3)^2$
 $y = \frac{1}{8}(x-3)^2 - 4$
 $p = 2$
 vertical



Write the equation of the parabola in standard form given the following information.

4. Vertex (9, 7) Directrix $y = 8$ Horizontal

$y = 8$ $\Delta y = 1 \therefore p = 1$

Graph opens away from directrix (it never intersects)

$y = -\frac{1}{4}(x-9)^2 + 7$

Complete the square to put the following parabolas into standard form.

5. $x^2 - 6x - 4y = -1$

$-4y = -x^2 + 6x - 1$

$4y = x^2 - 6x + 1$

$4y = x^2 - 6x + 9 + 1 - 9$

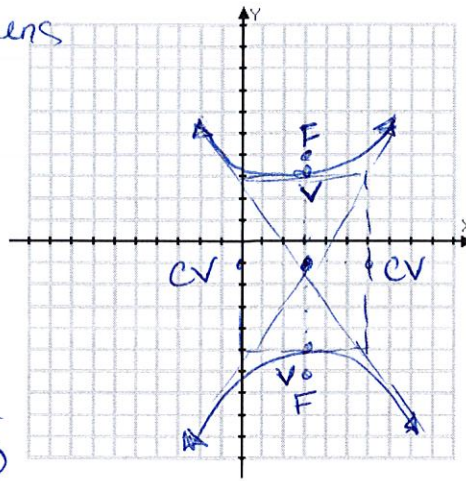
$4y = (x-3)^2 - 8$
 $y = \frac{1}{4}(x-3)^2 - 2$

Graph the following. Then identify the center, vertices, and foci for each.

6. $\frac{(y+1)^2}{16} - \frac{(x-3)^2}{9} = 1$

Graph opens
 \updownarrow
 $\leftarrow \rightarrow$

Center:	$(3, -1)$
Vertices:	$(3, 3)$ $(3, -5)$
Foci:	$(6, -1)$ $(3, 4)$ $(3, -6)$



Vertices
 $(3, -1)$
 $(3, -4)$

Covertices
 $(3, -1)$
 $(6, -1)$
 $(0, -1)$

$c^2 = a^2 + b^2$
 $c^2 = 16 + 9$
 $c^2 = 25$
 $c = 5$

foci
 $(3, -1)$
 $(3, -5)$

Write the equation of the hyperbola in standard form given the following information.

7. Vertices $(9, 7), (9, -17) \rightarrow$ center is midpoint of
 Foci $(9, 8), (9, -18) \Delta y = 26 \therefore c = 13$

vertices (and also of
 the pair of
 covertices and
 also the pair
 of foci)

center $(\frac{9+9}{2}, \frac{7+(-17)}{2})$
 $(\frac{18}{2}, \frac{-10}{2})$
 $(9, -5)$

$c^2 = a^2 + b^2$
 $13^2 = 12^2 + b^2$
 $169 = 144 + b^2$
 $25 = b^2$

Graph is vertical
 because Δy

$\frac{(y+5)^2}{144} - \frac{(x-9)^2}{25} = 1$

Complete the square to put the following hyperbolas into standard form.

8. $9y^2 - x^2 + 4x + 90y = -212$

$9y^2 + 90y - x^2 + 4x = -212$

$9(y^2 + 10y + 25) - (x^2 - 4x + 4) = -212$
 $+ 225$

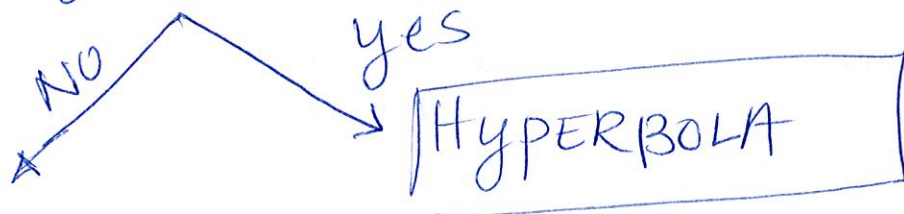
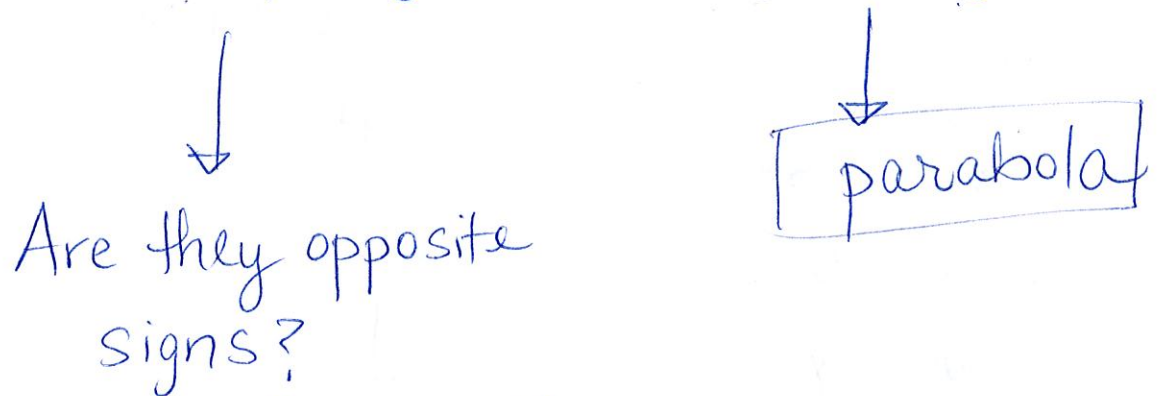
$- 4$

$9(y+5)^2 - (x-2)^2 = 9$

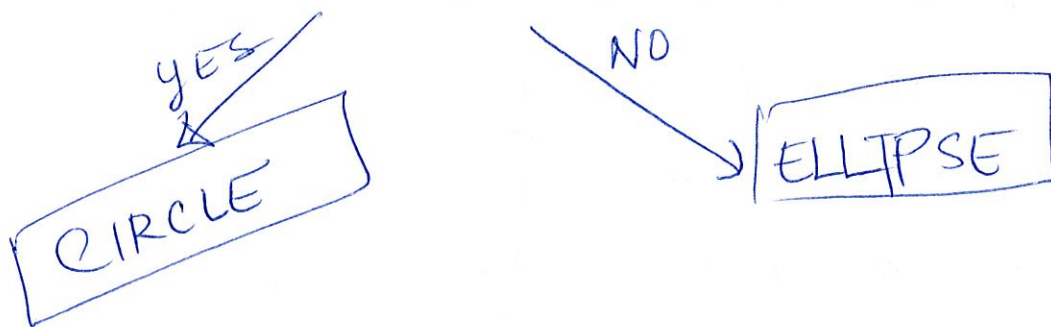
$\frac{(y+5)^2}{9} - \frac{(x-2)^2}{9} = 1$

What's My Conic?

Are x^2 and y^2 ? Is only x^2 or y^2 ?



Are the coefficients the same?



Conic Identification and Summary

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

2. $\frac{x^2}{4} + \frac{y^2}{9} = 1$

3. $\frac{(x - 3)^2}{4} - \frac{(y + 6)^2}{9} = 1$

4. $\frac{(x + 5)^2}{4} + \frac{(y - 4)^2}{4} = 1$

5. $(x - 5)^2 = 8(x - 4)$

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

7. $x^2 + 4y^2 - 6x - 16y + 21 = 0$

8. $4x^2 - y^2 - 4x - 3 = 0$

9. $y^2 - 4y - 4x = 0$

10. $4x^2 + 3y^2 + 8x - 24y + 51 = 0$

11. $4y^2 - 2x^2 - 4y - 8x - 15 = 0$

12. $25x^2 - 10x - 200y - 119 = 0$

13. $4x^2 + 4y^2 - 16y + 15 = 0$

14. $x^2 - y^2 - 6x + 8y + 2 = 0$

15. $2(x - 4)^2 + 2y^2 = 10$

16. $3x^2 + (y + 3)^2 = 18$

17. $x^2 = y^2 + 4$

18. $x = (y + 6)^2 - 5$
