HONORS PRACTICE TEST 3- Conic Sections Name:_____

Identify the direction of opening, vertex, axis of symmetry, p value, focus, and directrix of each.

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

Opens: down

vertex: (5, -1)

axis of symmetry: $x = 5$

p = -2

focus: (5, -3)

directrix: $y = 1$

$\frac{-1}{8} = \frac{1}{4p}$

$-4p = 8$

$p = -2$

Graph the parabola for the following equations.

2) $\sqrt{x+5} = \sqrt{(y-2)^2}$

$\pm\sqrt{x+5} = y-2$

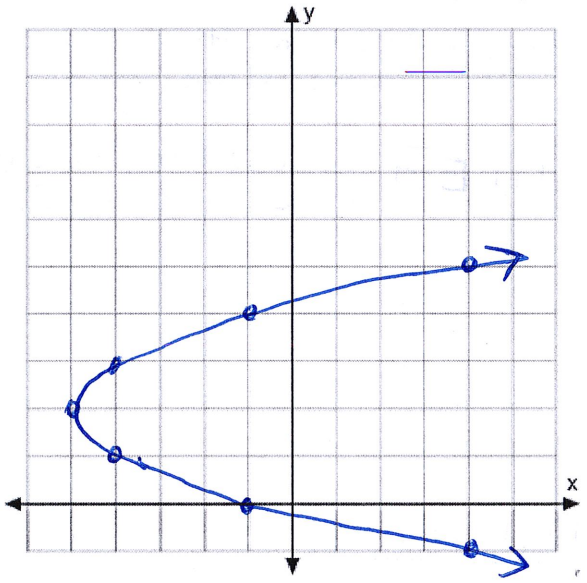
$2 \pm \sqrt{x+5} = y$

$2+\sqrt{x+5}$

x	y
-5	2
-4	3
-1	4
4	5

$2-\sqrt{x+5}$

x	y
-5	2
-4	1
-1	0
4	-1



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Find the equation of the parabola given the focus and directrix.

3) Focus : (2, 4) and Directrix : $y = 0$

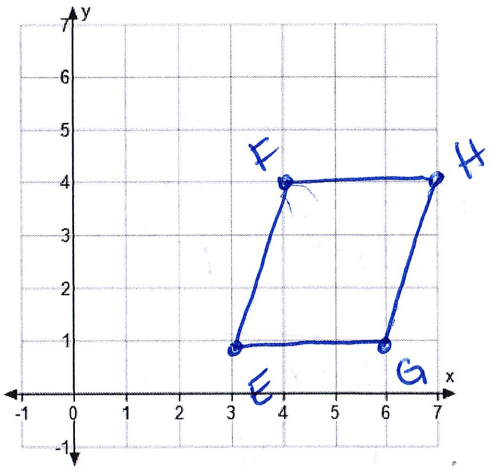
$F(2,4)$ $D(2,0)$

$V = \left(\frac{2+2}{2}, \frac{4+0}{2}\right) = (2,2)$

$p = F_y - V_y = 4-2 = 2$

Equation: $y-2 = \frac{1}{8}(x-2)^2$

Plot points E = (3, 1), F = (4, 4), G = (6, 1) and H = (7, 4).



★Slope★

$\overline{EF} \parallel \overline{GH}$ because they have the same slope of 3.

$\overline{FH} \parallel \overline{EG}$ because they have the same slope of 0.

4) What specialized geometric figure is quadrilateral EFHG? **Support your answer mathematically.**

★Distance★

$EG = 3$

$\overline{EF} = \sqrt{3^2+1^2} = \sqrt{10}$

} Not the same! So it is NOT a rhombus.

The quadrilateral EFHG is a parallelogram.

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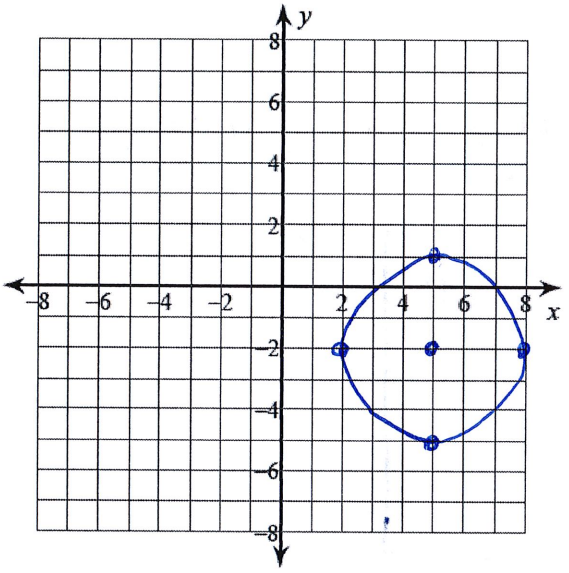
Identify the center and radius of each. Then sketch the graph.

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



Center: (5, -2)

Radius: 3

6) Write the equation of a circle with a center at (-3, 0) and passes through the point (1, 3).

distance $=\sqrt{(-3-1)^2+(0-3)^2}=\sqrt{25}=5=r$

$(x+3)^2+y^2=25$ or $(x+3)^2+(y+0)^2=25$

7) Given the equation of circle Z, $(x+8)^2+(y-9)^2=100$, determine if the point (-2, 0) lies on the circle Z.

$(-2+8)^2+(0-9)^2 \stackrel{?}{=} 100$

$117 \neq 100$

$117 > 100$

No! It lies outside the circle and not on the circle.

8) Given the equation of circle N, $(x-4)^2+(y+3)^2=1$, determine if the point (4, -2) lies on the circle N.

$(4-4)^2+(-2+3)^2 \stackrel{?}{=} 1$

$1=1$

Yes! It lies on the circle

HONORS PRACTICE TEST 3- Conic Sections Name:_____

Find the center and radius of the given equation.

9) $x^2 + y^2 + 2x - 4y = 5$

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

$x^2+2x+\underline{1}+y^2-4y+\underline{4}=5+\underline{1}+\underline{4}$

$(x+1)^2+(y-2)^2=10$

Center $=(-1,2)$

Radius $=\sqrt{10}$