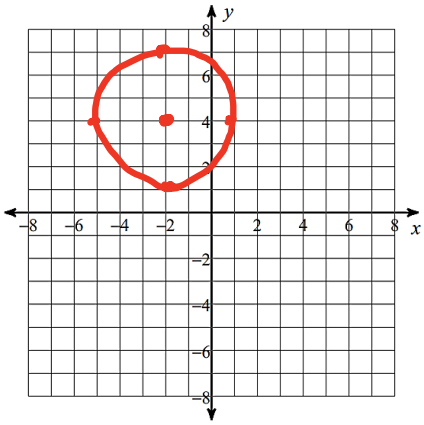
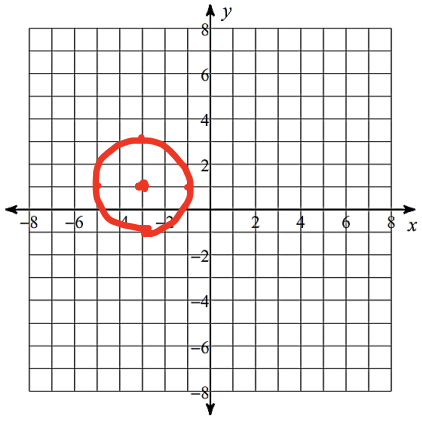
Conics Quiz Review Name: Key Block: ___

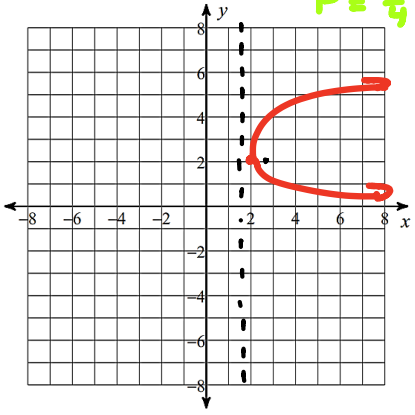
1) $(x+2)^2+(y-4)^2=9$



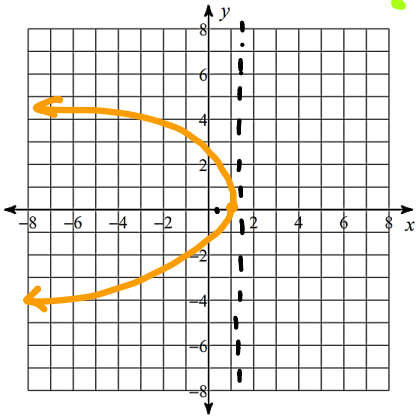
2) $(x+3)^2+(y-1)^2=4$



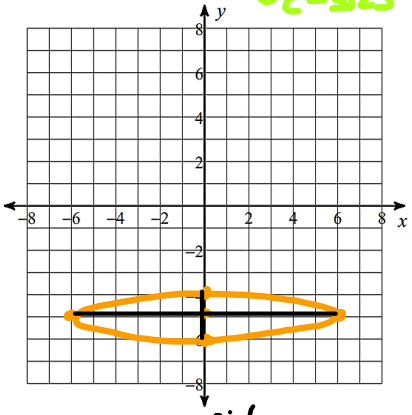
3) $(y-2)^2=x-2$ $4p=1$ $p=\frac{1}{4}$



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

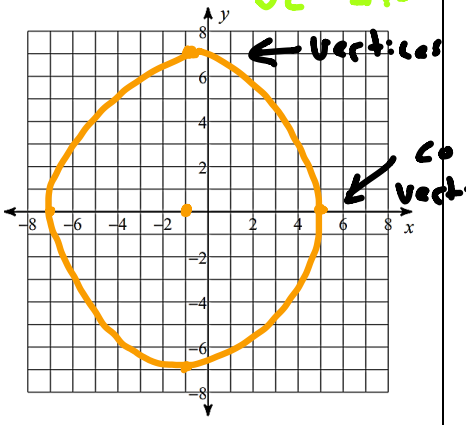


5) $\frac{x^2}{36}+(y+5)^2=1$ $c^2=a^2-b^2$ $c^2=36-1$ $\sqrt{c^2}=\sqrt{25}$

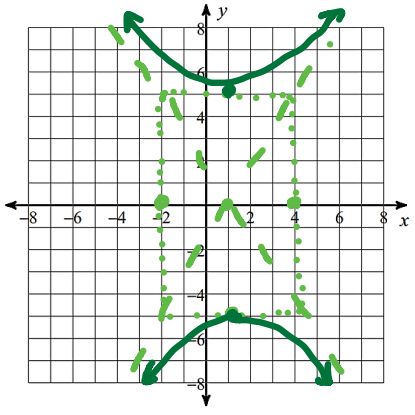


major axis: 6
minor axis: 2

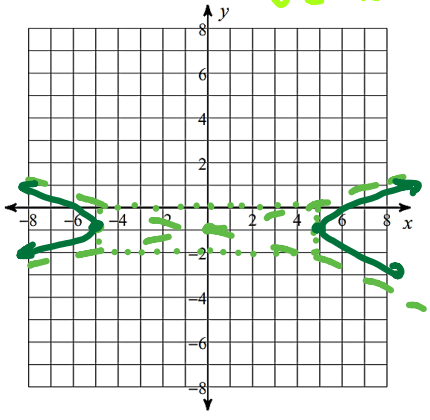
6) $\frac{(x+1)^2}{36}+\frac{y^2}{49}=1$ $c^2=a^2-b^2$ $c^2=49-36$ $\sqrt{c^2}=\sqrt{13}$



7) $\frac{y^2}{25}-\frac{(x-1)^2}{9}=1$ $c^2=a^2+b^2$ $c^2=25+9$ $\sqrt{c^2}=\sqrt{34}$

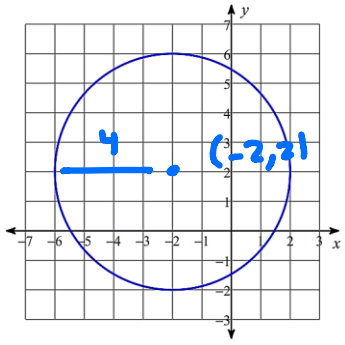


8) $\frac{x^2}{25}-(y+1)^2=1$ $c^2=a^2+b^2$ $c^2=25+1$ $\sqrt{c^2}=\sqrt{26}$



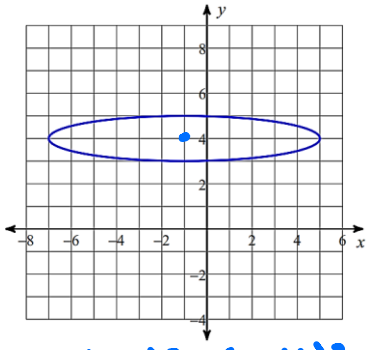
Write the standard equation for each.

9.



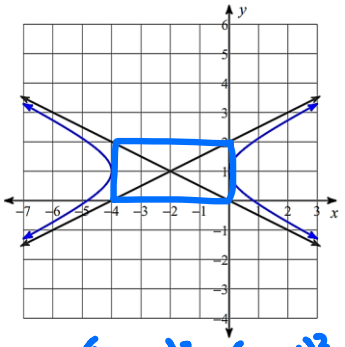
$(x+2)^2+(y-2)^2=16$

10.



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

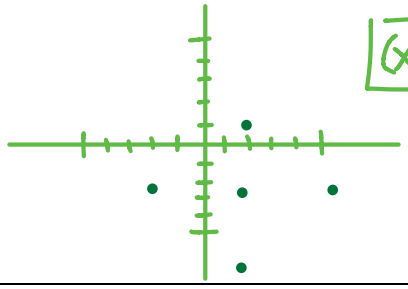
11.



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

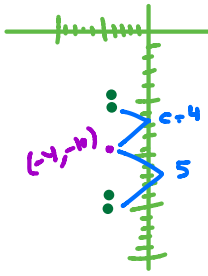
Write the standard

12. Write the equation of the circle with vertices (2,1), (-2,-3), (2,-7), and (6,-3).



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

13. Write the equation of the ellipse with the vertices (-4, -5), (-4,-15) and foci (-4,-6), (-4,-14).



$\frac{(x+2)^2}{9}+\frac{(y+10)^2}{25}=1$

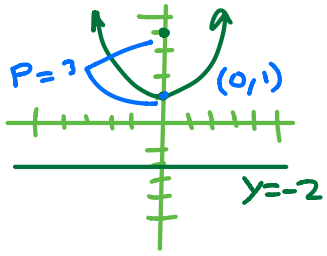
$c^2=a^2-b^2$
$4^2=25-b^2$
$-25\ \ -25$
$-9=-b^2$
$b=3$

14. Writ the equations of the ellipse with vertices (-3,-2), (1,-2) and covertices (-1,-7), (-1,3).

(-1,-2)

$\frac{(x+1)^2}{4}+\frac{(y+2)^2}{25}=1$

15. Write the equation of the parabola with the focus (0,4) and the directirx $y=-2$.



$(x-h)^2=4p(y-k)$
$x^2=4(3)(y-1)$
$x^2=12(y-1)$

Write the equation in standard form and classify the conic.

16. $25x^2+16y^2+100x-32y-284=0$

$25x^2+100x+16y^2-32y=284$
$25(x^2+4)+16(y^2-2y)=284$
$25(x+2)^2+16(y-1)^2=284+25(2)^2+16(1)^2$
$\frac{25(x+2)^2}{400}+\frac{16(y-1)^2}{400}=\frac{400}{400}$

$\frac{(x+2)^2}{16}+\frac{(y-1)^2}{25}=1$

ellipse

17. $25x^2-y^2+100x+75=0$

$25x^2+100x-y^2=-75$
$25(x^2+4x)-y^2=-75$
$25(x+2)^2-y^2=-75+25(2)^2$
$\frac{25(x+2)^2}{25}-\frac{y^2}{25}=\frac{25}{25}$

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

hyperbola

18. $25x^2 + 9y^2 - 225 = 0$

$+225 \quad +225$

$\frac{25x^2}{225} + \frac{9y^2}{225} = \frac{225}{225}$

$\frac{x^2}{9} + \frac{y^2}{25} = 1$

ellipse

19. $x^2 + y^2 - 4x + 2y - 11 = 0$

$x^2 - 4x + y^2 + 2y = 11$

$(x-2)^2 + (y+1)^2 = 11 + 2^2 + 1^2$

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

circle

20. $-y^2 + x + 4y - 1 = 0$

$+y^2 \quad -4y \quad +y^2 - 4y$

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

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

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

parabola

21. $2y^2 + x - 20y + 48 = 0$

$-x \quad -48 \quad -x - 48$

$2y^2 - 20y = -x - 48$

$2(y^2 - 10y) = -x - 48$

$2(y-5)^2 = -x - 48 + 2(5)^2$

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

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

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

parabol

Find all of the solutions to the following conic systems of equations.

22. Solve by substitution.

$x + 1 = y^2$

$x^2 + y^2 = 7$

$x^2 + x + 1 = 7$

$-7 \quad -7$

$x^2 + x - 6 = 0$

$(x-2)(x+3) = 0$

$x = 2 \quad x = -3$

$2 + 1 = y^2$

$\sqrt{3} = \sqrt{y^2}$

$y = \pm\sqrt{3}$

$(2, \pm\sqrt{3})$

$-3 + 1 = y^2$

$\sqrt{-2} = \sqrt{y^2}$

$y = \pm i\sqrt{2}$

23. Solve by elimination.

$4x^2 + y^2 = 36$

$-\ 4x^2 + 4y^2 = -16$

$\frac{5y^2}{5} = \frac{20}{5}$

$\sqrt{y^2} = \sqrt{4}$

$y = \pm 2$

$4x^2 + (2)^2 = 36$

$-4 \quad -4$

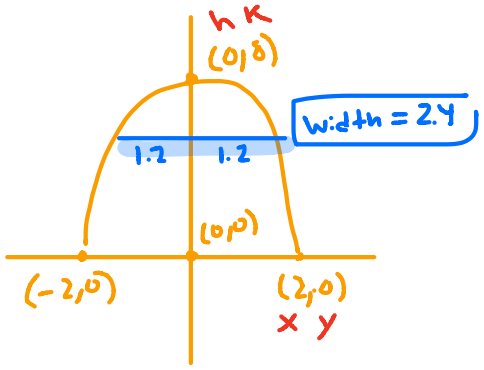
$\frac{4x^2}{4} = \frac{32}{4}$

$\sqrt{x^2} = \sqrt{8}$

$x = \pm 2\sqrt{2}$

$(\pm 2\sqrt{2}, \pm 2)$

24. A doorway in a castle is shaped like a parabola. Find the equation describing the door given that it is 4 feet across and 8 feet high in the center. Determine the width of the doorway at a point 5 feet off the ground.



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

$(2-0)^2 = 4p(0-8)$

$4 = 4p(-8)$

$\frac{4}{-32} = \frac{-32p}{-32}$

$p = -1$

$y = 5$

$(x-0)^2 = 4(-\frac{1}{8})(y-8)$

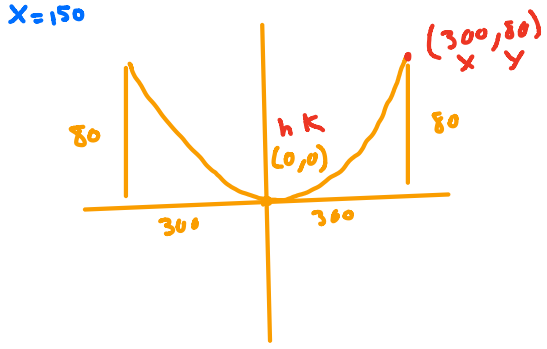
$x^2 = -\frac{1}{2}(y-8)$

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

$\sqrt{x^2} = \sqrt{1.5}$

$x = \pm 1.2$

25. The cables of a suspension bridge are in the shape of a parabola. The towers supporting the cable are 600 feet apart and 80 feet high. If the cables touch the road surface midway between the towers, what is the height of the cable at a point 150 feet from the center of the bridge?



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

$(300-0)^2 = 4p(80-0)$

$90{,}000 = 4p(80)$

$\frac{90{,}000}{320} = \frac{320p}{320}$

$p = 281.25$

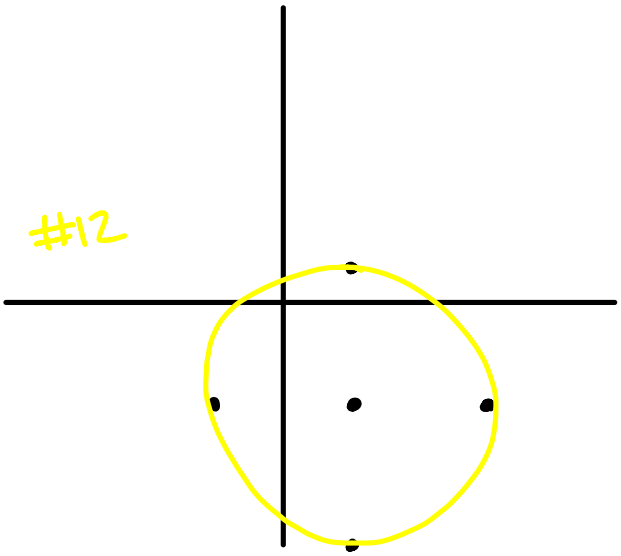
$(x-0)^2 = 4(281.25)(y-0)$

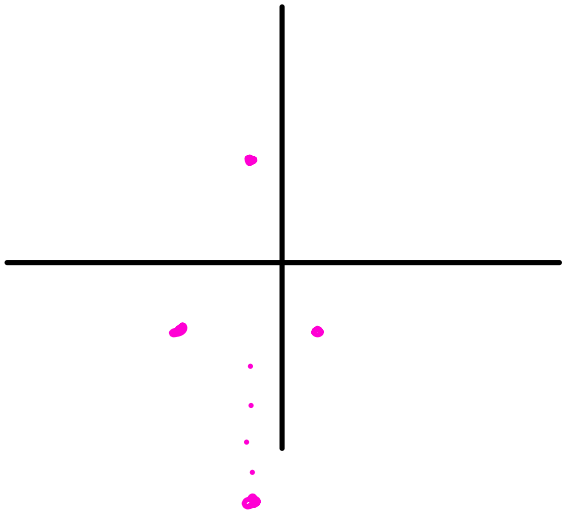
$x^2 = 1125(y)$

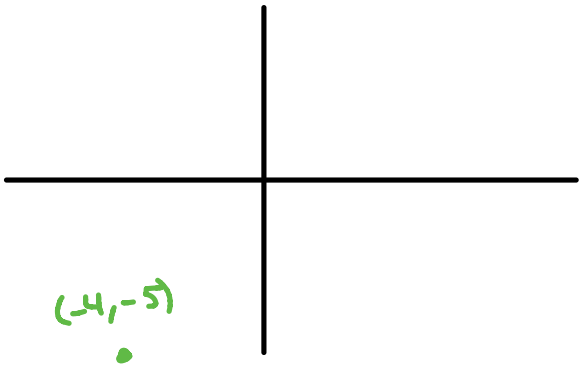
$150^2 = 1125y$

$y = 20$

#12







(-4,-5)

(-4,-6)

(-4,-6)

(-4,-14)

(-4,15)

$c^2 = a^2 - b^2$

$4^2 = 5^2 - b^2$

$16 = 25 - b^2$

$-25 \quad -25$

$\frac{-9}{-1} = \frac{-b^2}{-1}$

$\sqrt{b^2} = \sqrt{9}$

$\frac{(x-h)^2}{a^2} + \frac{(y-k)^2}{b^2} = 1$