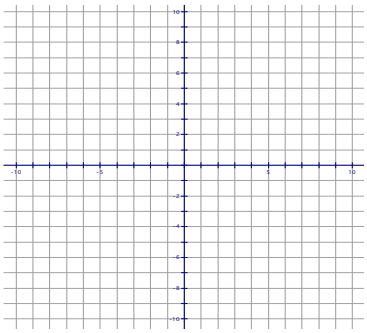
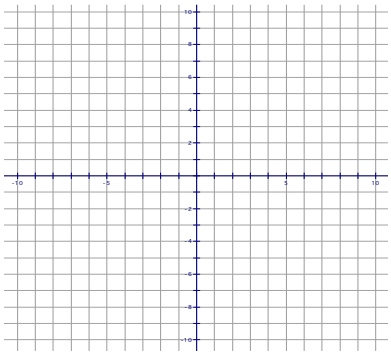
Name:_____ **Period:_____**

PRE-CALCULUS CH10 Practice Mrs. Portugues Brennan

1. Find the equation of a parabola with Focus (-7,0); Directrix X = 7. _____



2. Find the equation of a parabola Vertex (-3,2), Focus (-2,2). Find two additional points and graph.



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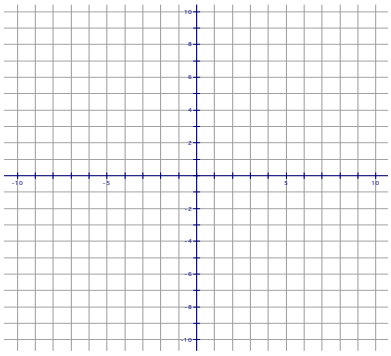
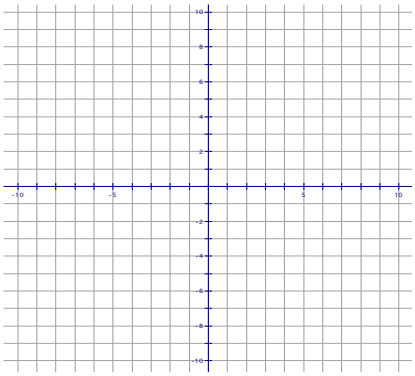
3. Find the center, foci, vertices of the ellipse. Graph. Center _____; Vertices _____; Foci _____

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



4. Find the equation of an ellipse with Center (6,6), Focus at (9,6); Vertex (11,6). Graph.



Complete the Square and Graph.

5. $2X^2 + 3Y^2 - 24X + 36Y + 174 = 0$

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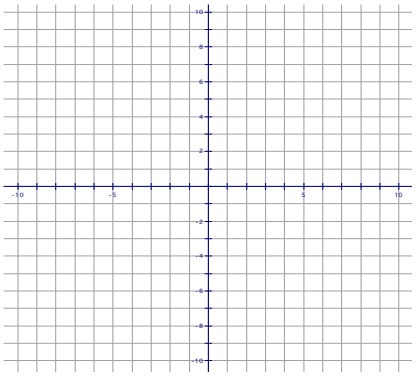
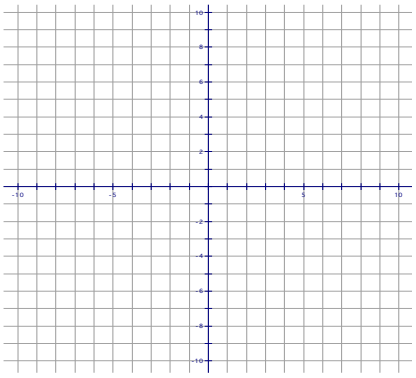
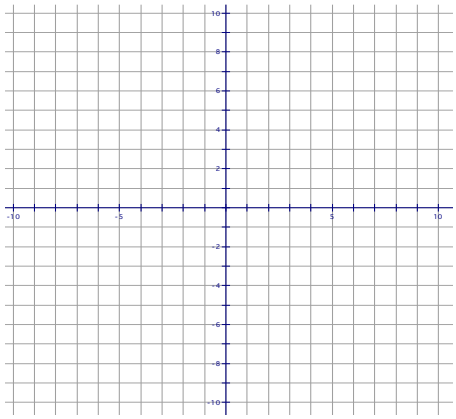


6. Sketch $9Y^2 = 4X^2 + 36$



7. Write the equation for the hyperbola with vertices at (6,0), (-6,0), Foci at (7,0) ,(-7,0). Sketch



8. Identify the type of conic graph.

A. $X^2 + 4X + Y + 3 = 0$ _____

B. $2X^2 + 3Y^2 + 6Y + 4 = 0$ _____

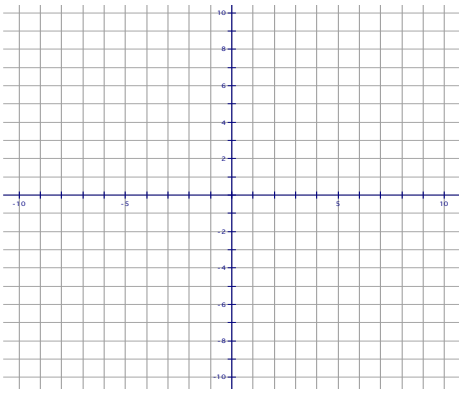
C. $4X^2 - 3Y^2 - 8X + 6Y + 1 = 0$ _____

D. $X^2 + 3XY - 2Y^2 + 3X + 2Y + 5 = 0$ _____

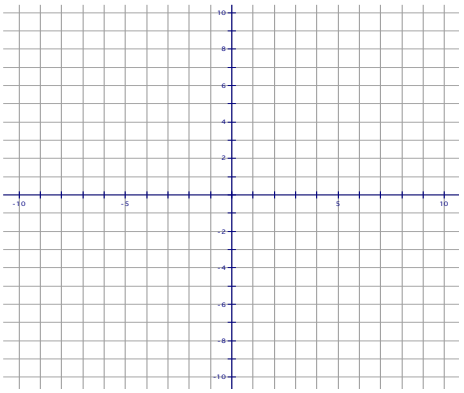
E. $3X^2 + 3XY - 2Y^2 + 3X + 2Y + 5 = 0$ _____

Graph from the parametric equations below. Find the Rectangular Equation in Terms of X and Y

9. X = 3T + 2 Y = T + 1 $0 \le t \le 4$

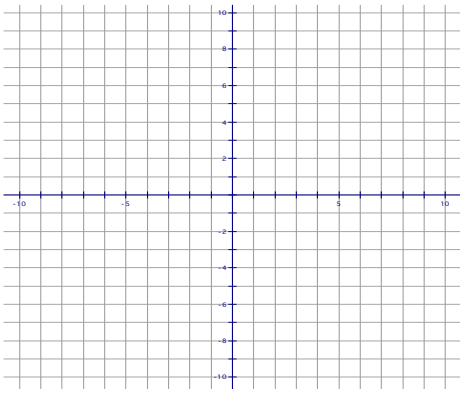


10. $x = 2\cos t$ $y = 3\sin t$ $0 \le t \le 2\pi$



11. Write the parametric equations that describe a counterclockwise motion with 2sec per revolution starting at pt. (1,0)

$x^2 + \frac{y^2}{9} = 1$ **; Conic** _____ **R_x =** _____ **R_y =** _____



OPTIONAL: CHALLENGE

GRAPHING: $Ax^2 + Bxy + Cy^2 + Dx + Ey + F = 0$ **Rewrite the equation in terms of x' and y' without x'y' term**

1. FIND TYPE OF CONIC

2. FIND ANGLE OF ROTATION θ $\cot(2\theta) = \dfrac{\cos(2\theta)}{\sin(2\theta)} = \dfrac{A-C}{B}$; $\cos\theta = \sqrt{\dfrac{1+\cos 2\theta}{2}}$; $\sin\theta = \sqrt{\dfrac{1-\cos 2\theta}{2}}$

3. REWRITE EQUATION IN TERMS X' AND Y' ON A ROTATED AXIS

$x = x'\cos\theta - y'\sin\theta$ $y = x'\sin\theta + y'\cos\theta$

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12. $x^2 + \sqrt{3}xy + 2y^2 - 10 = 0$ **Rewrite the equation with no xy term. Sketch on a rotated axis.**

a. Identify Conic: _____; **Identify Angle of Rotation = _____**

b. Rewrite terms of X' and Y'

c. Rewrite Equation in terms of X' and Y'. Sketch

Find Conic Type. Specify the position of the Directrix. Find Key Points (Vertices) and Center. Sketch

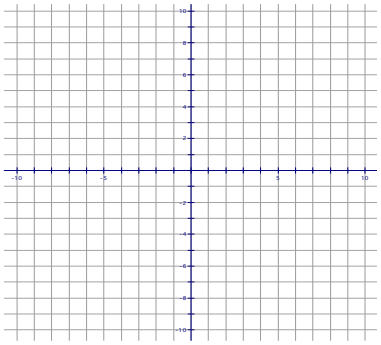
Eccentricity, e $e = \dfrac{d(F,P)}{d(D,P)}$ **PARABOLA (e = 1)**

Eccentricity, e $e = \dfrac{c}{a}$, **ELLIPSE (e < 1); HYPERBOLA (e > 1)**

c = distance from center to focus
a = distance from center to vertex

$r = \dfrac{ep}{1-e\cos\theta}; r = \dfrac{ep}{1+e\cos\theta}$ $r = \dfrac{ep}{1-e\sin\theta}; r = \dfrac{ep}{1+e\sin\theta}$

13. $r = \dfrac{3}{4-2\cos\theta}$ **Conic** _____



14. $r = \dfrac{1}{1+\cos\theta}$ **Conic** _____