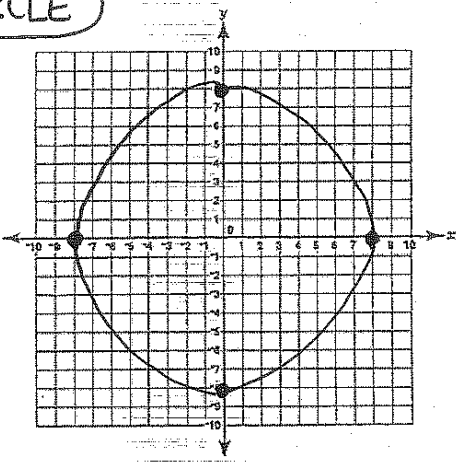
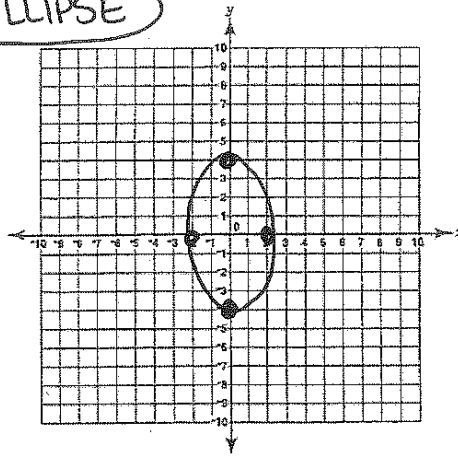
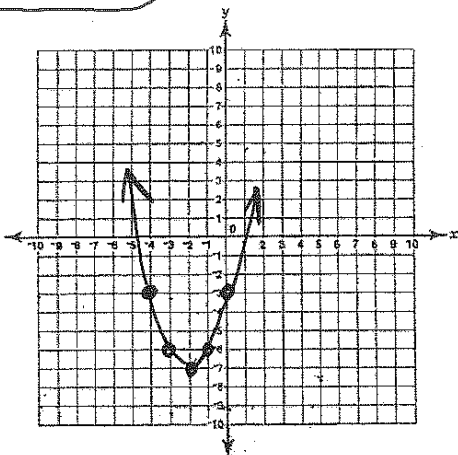
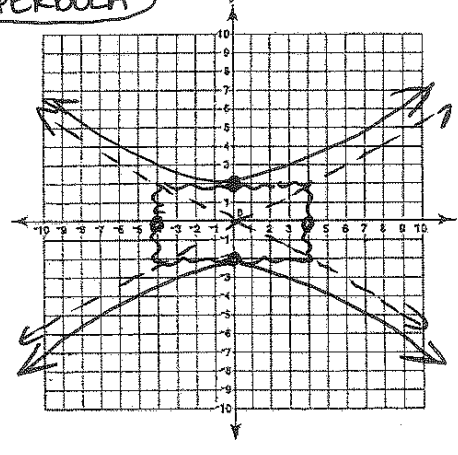


Midpoint Formula	Distance Formula
$\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$ <p>1. Find the midpoint of the line segment with endpoints at (8, 3) and (-4, 9).</p> <p style="text-align: center;">$(2, 6)$</p>	$\sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$ <p>2. Find the distance between (-5, 8) and (4, 3).</p> <p style="text-align: center;">$d = \sqrt{106} \approx 10.3$</p>

State whether the graph of each equation is a parabola, circle, ellipse, or hyperbola. Then graph each equation.

<p>3. $y^2 = 64 - x^2$</p> <p style="text-align: center;">CIRCLE</p> 	<p>4. $4x^2 + y^2 = 16$</p> <p style="text-align: center;">ELLIPSE</p> 
<p>5. $x^2 + 4x - 3 = y$</p> <p style="text-align: center;">PARABOLA</p> 	<p>6. $\frac{y^2}{4} - \frac{x^2}{16} = 1$</p> <p style="text-align: center;">HYPERBOLA</p> 

7. A loudspeaker in a school is located at the point (65, 40). The speaker can be heard in a circle with a radius of 100 feet. Write an equation to represent the possible boundary of the loudspeaker sound.

$$(x-65)^2 + (y-40)^2 = 10,000$$

8. Write an equation for the circle that has endpoints of a diameter at (4, -2) and (-2, -6).

~~XXXXXXXXXX~~

$$(x-1)^2 + (y+4)^2 = 13$$

9. Find the center and radius of the circle: $x^2 + y^2 + 4x - 2y - 11 = 0$

$$C(-2, 1) \quad r = 4$$

10. Write an equation of a hyperbola that has vertices at (-3, -3) and (5, -3) and a conjugate axis of length 6 units.

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

11. Write an equation of ~~a~~ ^{vertical} ellipse with center (5, -2), major axis length of 10 units, and minor axis length of 6 units.

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