

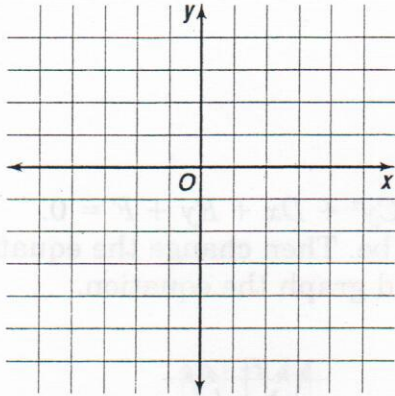
Practice

Student Edition
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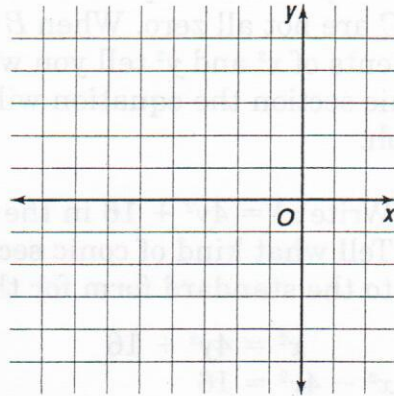
Conic Sections

Write each equation in standard form. State whether the graph of the equation is a parabola, a circle, an ellipse, or a hyperbola. Then graph the equation.

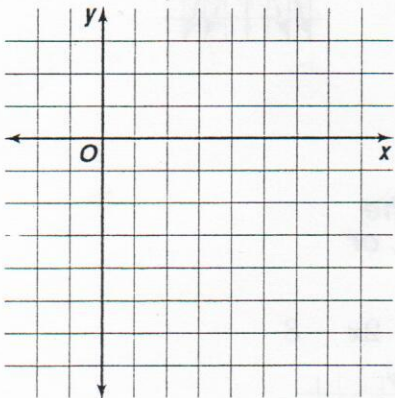
1. $y^2 = -3x$



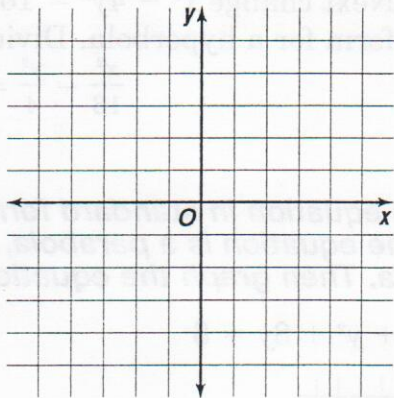
2. $x^2 + y^2 + 6x = 7$



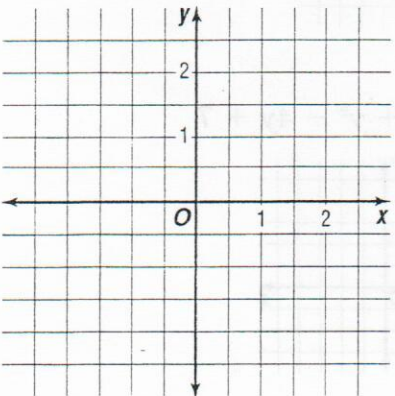
3. $5x^2 - 6y^2 - 30x - 12y + 9 = 0$



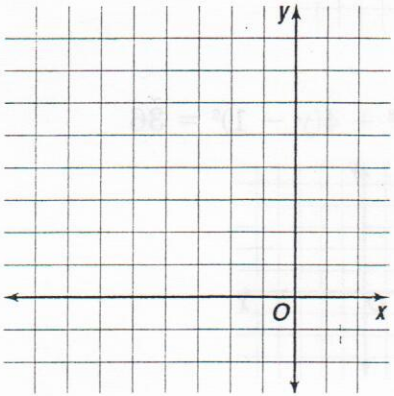
4. $3x^2 = 8 - 4y^2 - 8y$



5. $5y^2 = 10 - 4x^2$



6. $5x^2 + 2y^2 + 30x - 16y + 67 = 0$



Study Guide

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Conic Sections

Parabolas, circles, ellipses, and hyperbolas are known as **conic sections**. Any conic section in the coordinate plane can be described by an equation of the form $Ax^2 + Bxy + Cy^2 + Dx + Ey + F = 0$, where A , B , and C are not all zero. When $B = 0$, the coefficients of x^2 and y^2 tell you what kind of conic section the equation will have for its graph.

$A = C$	circle
$A \neq C$, but have same sign	ellipse
$A \neq C$, but have opposite signs	hyperbola
$A = 0$ or $C = 0$, but not both	parabola

Example: Write $x^2 = 4y^2 + 16$ in the form $Ax^2 + Bxy + Cy^2 + Dx + Ey + F = 0$. Tell what kind of conic section the graph will be. Then change the equation to the standard form for that conic section and graph the equation.

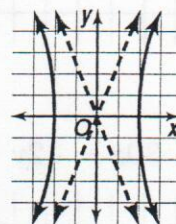
$$x^2 = 4y^2 + 16$$

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

Since A and C have opposite signs, the graph will be a hyperbola.

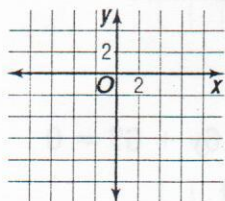
Next change $x^2 - 4y^2 = 16$ to the standard form for a hyperbola. Divide each side by 16.

$$\frac{x^2}{16} - \frac{y^2}{4} = 1$$

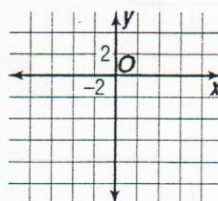


Write each equation in standard form. State whether the graph of the equation is a parabola, a circle, an ellipse, or a hyperbola. Then graph the equation.

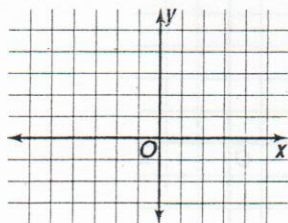
1. $x^2 - 2x + y^2 + 8y = 8$



2. $y = x^2 - 2x - 8$



3. $9(x + 4)^2 + 4(y - 1)^2 = 36$



4. $x^2 = 2x + y^2 - 4y + 7$

