Name: _____ Period: _____ Date: _____

Ellipses and Circles Bell Work

Write each equation in standard form and identify the conic related to it.

1. $x^2 + y^2 + 6x - 4y - 3 = 0$

2. $3x^2 + y^2 + 42x + 4y + 142 = 0$

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Ellipses and Circles Bell Work

Answers

Write each equation in standard form and identify the conic related to it.

1. $x^2 + y^2 + 6x - 4y - 3 = 0$

$x^2 + 6x + 9 + y^2 - 4y + 4 - 3 = 0 + 9 + 4$

$(x + 3)^2 + (y - 2)^2 = 13 + 3$

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

Because $a = b$, and the equation is of the form $(x - h)^2 + (y - k)^2 = r^2$

→ The conic is a circle.

2. $3x^2 + y^2 + 42x + 4y + 142 = 0$

$3x^2 + 42x + 147 + y^2 + 4y + 4 + 142 = 0 + 147 + 4$

$3(x^2 + 14x + 49) + (y^2 + 4y + 4) + 142 = 151$

$3(x + 7)^2 + (y + 2)^2 = 9$

$\frac{(x+7)^2}{3} + \frac{(y+2)^2}{9} = 1$

Because $a \neq b$, and the equation is of the form $\frac{(x-h)^2}{a^2} + \frac{(y-k)^2}{b^2} = 1$

→ The conic is an ellipse.