

Unit 2: Conics**2.4 General to Standard Form**

Ex. Identify the conic, then change to standard form.

a) $x^2 + 10x + 4y + 13 = 0$ *parabola*

$$(x^2 + 10x + 25) + 13 = -4y$$

$$(x+5)^2 - 12 = -4y$$

$$y = -\frac{1}{4}(x+5)^2 + 3$$

b) $4x^2 - 9y^2 + 32x + 18y + 91 = 0$ *hyperbola*

$$4(x^2 + 8x + 16) - 9(y^2 - 2y + 1) = -91 + 64 - 9$$

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

$$\frac{(x+4)^2}{9} - \frac{(y-1)^2}{4} = -1$$

c) $16x^2 + 9y^2 - 64x - 18y - 71 = 0$ *ellipse*

$$16(x^2 - 4x + 4) + 9(y^2 - 2y + 1) = 71 + 64 - 9$$

$$16(x-2)^2 + 9(y-1)^2 = 144$$

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