

11.6 Practice - Classify Conics

Period _____

Classify each conic section and write its equation in standard form.

1) $y^2 + x - 4y - 2 = 0$

$$y - 4y = -x + 2$$

$$(y-2)^2 = -x + 6$$

$$(y-2)^2 = -(x-6)$$

Parabola

2) $x^2 + y^2 + 4x - 8y + 13 = 0$

$$x^2 + 4x + 4 + y^2 - 8y + 16 = -13 + 4 + 16$$

$$(x+2)^2 + (y-4)^2 = 7$$

Circle

3) $5x^2 + 6y^2 + 10x - 24y - 121 = 0$

$$5x^2 + 10x + 6y^2 - 24y = 121$$

$$5(x^2 + 2x + 1) + 6(y^2 - 4y + 4) = 121$$

$$\frac{5(x+1)^2}{150} + \frac{6(y-2)^2}{150} = \frac{150}{150}$$

$$\frac{(x+1)^2}{30} + \frac{(y-2)^2}{25} = 1$$

Ellipse

4) $x^2 - y^2 - 2x - 6y - 12 = 0$

$$x^2 - 2x - y^2 - 6y = 12$$

$$x^2 - 2x + 1 - (y^2 + 6y + 9) = 12$$

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

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

Hyperbola

5) $-x^2 + 10x + y - 20 = 0$

$$-(x^2 - 10x + 25) = -y + 20$$

$$-(x-5)^2 = -y - 5$$

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

Parabola

6) $-x^2 - 12x + y - 34 = 0$

$$-(x^2 + 12x + 36) = -y + 34$$

$$-(x+6)^2 = -y - 2$$

$$(x+6)^2 = y + 2$$

Parabola

7) $x^2 + y^2 + 4x - 2y - 8 = 0$

$$x^2 + 4x + 4 + y^2 - 2y + 1 = 8 + 4 + 1$$

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

Circle

8) $x^2 + y^2 - 8x - 4y + 11 = 0$

$$x^2 - 8x + 16 + y^2 - 4y + 4 = -11 + 16 + 4$$

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

Circle

9) $4x^2 + 25y^2 - 16x + 200y + 316 = 0$

$$4x^2 - 16x + 25y^2 + 200y = -316$$

$$4(x^2 - 4x + 4) + 25(y^2 + 8y + 16) = -316$$

$$\frac{4(x-2)^2}{100} + \frac{25(y+4)^2}{100} = \frac{100}{100}$$

$$\frac{(x-2)^2}{25} + \frac{(y+4)^2}{4} = 1$$

Ellipse

10) $-9x^2 + 16y^2 - 64y - 80 = 0$

$$-9x^2 + 16y^2 - 64y = 80$$

$$-9x^2 + 16(y^2 - 4y + 4) = 80$$

$$\frac{-9x^2}{144} + \frac{16(y-2)^2}{144} = \frac{144}{144}$$

Negative can't be in front. Put this fraction second and make this subtraction between the fractions.

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

Hyperbola