parabola, ellipse, circle, Hyperbola

Algebra 2 Name_____

Notes on Classifying Conic Sections Date 2/13/20 Period 4

Classify each conic section.

1) $1x^2 + 1y^2 + 2x + 4y - 10 = 0$

Circle, because they x^2 & y^2 coefficients are the same.

2) $4x^2 + 196y^2 - 588y + 245 = 0$

Ellipse b/c x^2 and y^2 have same sign, but different coefficients.

3) $x^2 - 9y^2 - 2x - 18y - 17 = 0$

Hyperbola either x^2 or y^2 is negative.

4) $-x^2 - 12x + y - 36 = 0$

Parabola missing a squared term (either x^2 or y^2)

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

5) $9x^2 + 4y^2 + 18x + 32y + 37 = 0$ ← ellipse

$(9x^2 + 18x + \square) + (4y^2 + 32y + \square) = -37 + \square + \square$

$9(x^2 + 2x + \boxed{1}) + 4(y^2 + 8y + \boxed{16}) = -37 + \boxed{9} + \boxed{64}$

$\frac{\cancel{9}(x+1)^2}{\cancel{36}\,4} + \frac{\cancel{4}(y+4)^2}{\cancel{36}\,9} = \frac{36}{36}$

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

6) ~~$-x^2 - 8x + 3y + 4 = 0$~~ → parabola

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

circle

8) $4x^2 - y^2 - 24x - 4y + 28 = 0$

Hyperbola