

Advanced Precalculus
Homework: Ellipses and Hyperbolas

Name: _____

I. Sketch the graph of the Ellipse or Hyperbola, noting its “key features”:

1.) $\frac{(x+4)^2}{25} + \frac{(y-3)^2}{36} = 1$

2.) $\frac{(x+4)^2}{25} - \frac{(y-3)^2}{36} = 1$

3.) $16x^2 = 9y^2 + 36y + 32x + 164$

4.) $16x^2 + y^2 + 64x + 10y + 25 = 0$

5.) $49x^2 - 25y^2 = 196x + 1029$

6.) $81x^2 + y^2 = 80 + 2y$

7.) $4x^2 + y^2 + 2y = 8x + 3$

8.) $36x^2 + 324y = 81y^2 + 288x + 2664$

II. Determine the equation of the following:

9.) An ellipse with endpoints: $(-2, 1)$, $(5, 1)$, $(3, 7)$, $(3, -5)$

10.) An ellipse with endpoints $(4, 2)$ and $(10, 2)$ with a focal point at $(7, 3)$.

11.) An ellipse with endpoints $(1, 3)$ and $(1, 9)$ with a focal point at $(1, 4)$.

12.) A hyperbola with vertices at $(-4, -2)$ and $(-4, 8)$ with a focal point at $(-4, 0)$.

13.) A hyperbola with vertices at $(3, 2)$ and $(7, 2)$ with a focal point at $(6, 2)$.

14.) A hyperbola with focal points at $(0, 4)$ and $(0, 8)$ with a vertex at $(0, 2)$.