

Homework due **Tuesday, November 2.**

A. If applicable, redo the boxed problems from the last assignment.

B. §18.3 #2.

C. Consider the conic with focus $(0, -\frac{1}{9})$, directrix $y = \frac{1}{9}$, and eccentricity 1.

1. Decide whether it is a parabola, hyperbola, or ellipse.
2. Find its equation.
3. Does the point $(\frac{3}{2}, -1)$ lie on this curve? If so, find the equation of the tangent line at that point. If not, state whether it is above or below.
4. Sketch its graph.

D. Consider the conic section described in §12.3 #2.

1. Decide whether it is a parabola, hyperbola, or ellipse.
2. Find its equation.
3. Find its directrix and eccentricity.
4. Find its foci and vertices.
5. Find the equation of the tangent line to the curve at $(7,0)$ (this is §12.3 #12).
6. Sketch its graph.

E. Consider the conic section described in §12.2 #10.

1. Decide whether it is a parabola, hyperbola, or ellipse.
2. Find its directrix and eccentricity.
3. Find its foci and vertices.
4. Describe it as the set of points P such that the sum or difference of the distances of P from such-and-such points is such-and-such number (as in §12.3 #1-4).
5. Sketch its graph.