_____ / 47 total points (both parts)

Test #3 (Part 1, No Calculator) Name: _____

Math 160, Prof. Beydler Thursday, November 29, 2018

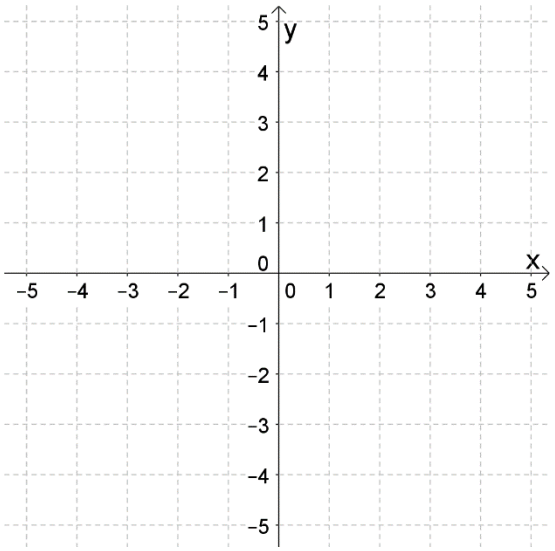
Directions: Show all work. No calculator, books, or notes. Your desk and lap must be clear (no phones, no smart watches, etc.). If you have a phone in your lap or on your chair, it is considered cheating, and you will receive a zero on this test. Write your answers in the indicated places, or box your answers. When you're finished with Part 1, please turn it in, take a bathroom break, get your calculator out, and start Part 2. Good luck!

1. (1 point) Are $\langle -2, -3 \rangle$ and $\langle -6, 4 \rangle$ orthogonal?

orthogonal not orthogonal (circle one)

2. (4 points) Determine whether the equation represents a parabola, an ellipse, or a hyperbola. If the graph is a parabola, find the vertex, focus, directrix, and focal diameter. If it is an ellipse, find the center, foci, vertices, lengths of the major and minor axes, and eccentricity. If it is a hyperbola, find the center, foci, vertices, and asymptotes. Then sketch the graph of the equation. (Note: $\sqrt{2} \approx 1.4$ and $\sqrt{6} \approx 2.4$)

$4x^2 - 2y^2 = 8$ parabola ellipse hyperbola (circle one)



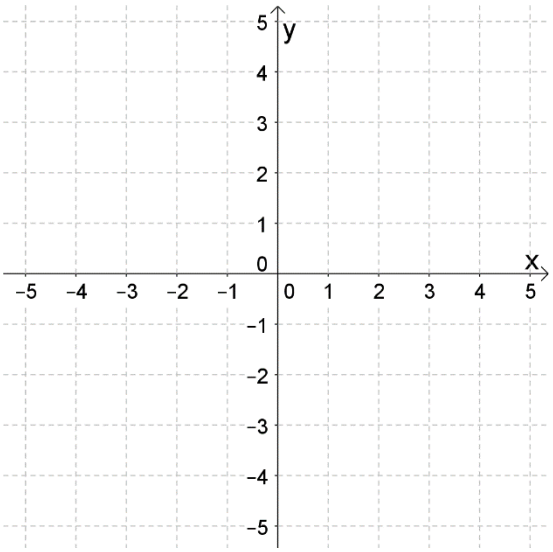
3. (2 points) Find an equation for the ellipse that satisfies the given conditions.

Foci: $(\pm 2, 0)$, vertices: $(\pm 3, 0)$

Answer: _____

4. (4 points) Determine whether the equation represents a parabola, an ellipse, or a hyperbola. If the graph is a parabola, find the vertex, focus, directrix, and focal diameter. If it is an ellipse, find the center, foci, vertices, lengths of the major and minor axes, and eccentricity. If it is a hyperbola, find the center, foci, vertices, and asymptotes. Then sketch the graph of the equation.

$x^2 + 4x = 4y - 4$ parabola ellipse hyperbola (circle one)



5. (3 points) Find all solutions to the system: $\begin{cases} x^2 - y^2 = 1 \\ 2x^2 - y^2 = x + 3 \end{cases}$

Answer: _____