

Show all your work for full credit. Unsupported answers = reduced points. Make neat, accurate graphs. Exact values for all coordinates please.

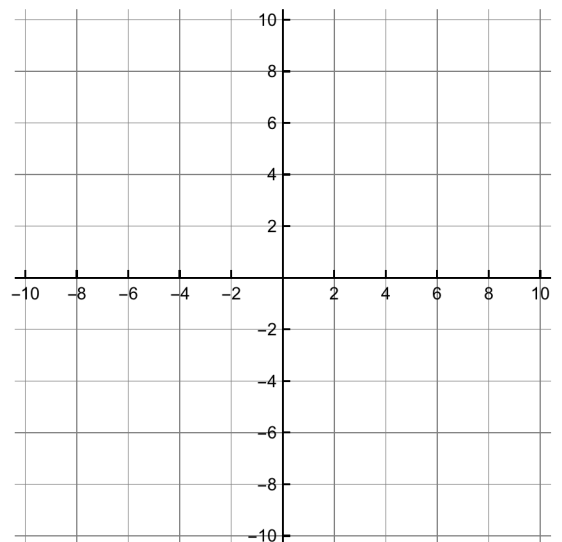
1. A carpenter wishes to construct an elliptical table top from a sheet of plywood that is 4ft by 8ft. He will trace out the ellipse using the "thumbtack and string" method. What length of string should he use, and how far apart should the tacks be located if the ellipse is to be as large as possible? Also, what is the eccentricity of the ellipse?

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2. Find the equation of a horizontal ellipse centered at the origin with eccentricity 0.6 and passes through the point $(4, \frac{12}{5})$.

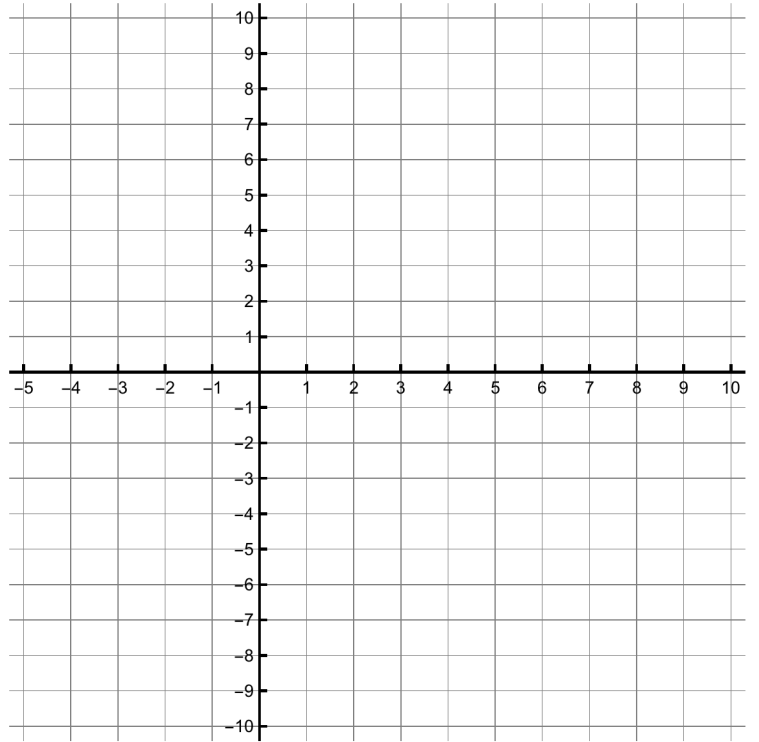
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3. Graph the parabola labeling the vertex, focus, Latus Rectum, and directrix: $y^2 + 8x - 4y - 44 = 0$.



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4. Find the standard form of the conic: $-x^2 + 4y^2 + 6x - 32y + 39 = 0$. Make an accurate sketch labeling all vertices, foci, asymptotes, etc.



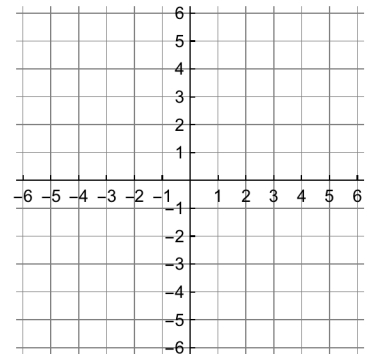
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5. Given the conic $25x^2 - 120xy + 144y^2 - 156x - 65y = 0$:

a) Identify the conic.

b) Find the angle of rotation

c) Solve the equation for y and graph the conic on your calculator. Make a sketch of the conic.



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EXTRA CREDIT Eliminate the rotation and write the function in standard conic form. Make an accurate graph of the function labeling all important features if appropriate (foci, directrix, asymptotes, vertices, Latus Rectum, etc.)