MA 154 Exam 3 Fall 2001

Place your answers in the spaces provided. You must show correct work to receive credit.

(10 pts.) 1. Given the vectors $a = -7i + 2j$ and $b = -8i - 4j$, find $4a + 5b$.

(6 pts.) 2. Find the exact value of $|4 - 7i|$.

(10 pts.) 3. Given the vectors $< 5, -6 >$ and $< -3, 7 >$, find the angle between them. Round your answer to the nearest degree.

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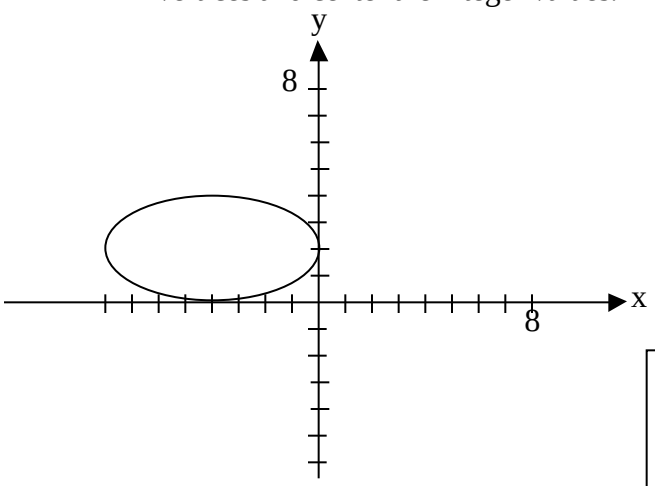
(10 pts.) 4. Express the complex number in trigonometric form, with $0 \le \theta < 2\pi$.

$3 - 3\sqrt{3}i$

(12 pts.) 5. Find the standard form of the equation of the conic. Assume the coordinates of the vertices and center are integer values.



(12 pts.) 6. Find an equation of the parabola with vertex V(–4, 7), axis parallel to the x-axis and passing through the point P(2, 4).

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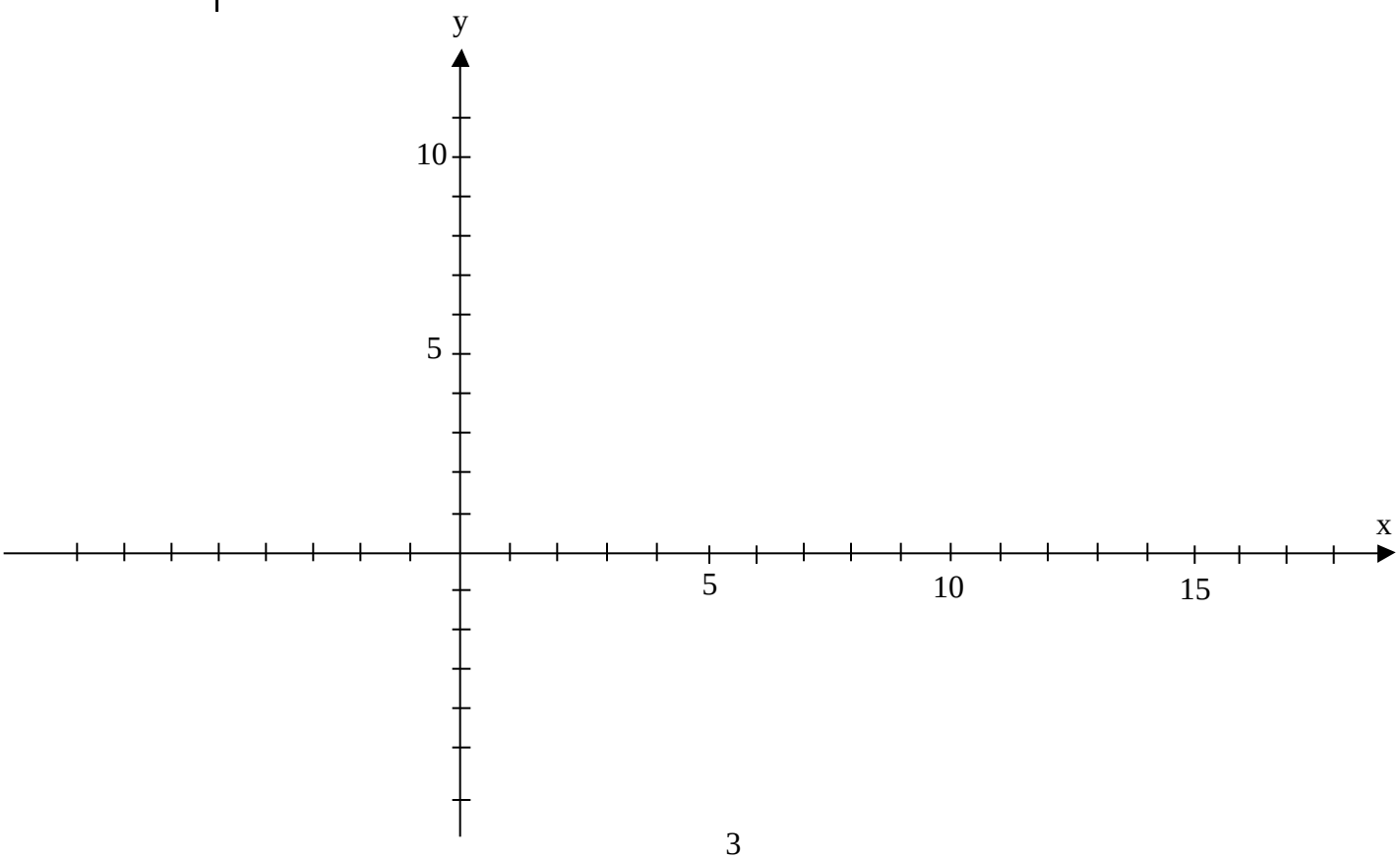
(16 pts.) 7. Sketch the graph of *f*. Find the **equation(s)** of the vertical and horizontal asymptotes, and all the intercepts. Use the x|y table to justify points in each region of the sketch. Use dotted lines to represent the asymptotes.

$$f(x) = \frac{2x^2 - x - 3}{x^2 - 9}$$

x	*y*

x-intercept(s):	
y-intercept(s):	
Vertical asymptote(s):	
Horizontal asymptote(s):	



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(12 pts.) 8. The magnitudes and directions of two forces acting at a point P are 70lbs., $200°$ and 40lbs., $120°$. (Angles are measured from the positive x-axis.) To one decimal place, approximate the magnitude and the direction of the resultant vector.

Magnitude =	
Direction =	

(12 pts.) 9. For the conic, $\frac{y^2}{49} - \frac{x^2}{16} = 1$, find the coordinates of the center and the vertices. Also, find the equations of the asymptotes.

Center:	
Vertices:	
Asymptotes:	