Math 150: Trigonometry
Instructor: Hugh Cassidy
Exam 3
Monday, July 18st, 2005

Instructions: Attempt all questions. You must show your work to receive full credit.

Name:_____

1. Express the following Complex Numbers in Trigonometric form :

(i) 2 + 2i (5 points)

(ii) 6 + 7i (10 points)

2. Express the following in the form a+bi:

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(i) $10(\cos {}^{7\pi}/_{3} + i \sin {}^{7\pi}/_{3})$ (5 points)

(ii) $\text{cis}\,(\tan^{-1} {}^{15}/_{17})$ (10 points)

3. Use De Moivre's Theorem to express $(1- i)^5$ in the form a+bi.
(10 points)

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4. Find the 3 cubed roots of -27. (10 points)

5. Find the equation of the parabola that has it's focus at (-1,0) and it's directrix at x = -2.

(5 points)

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6. Find the vertices and foci of the ellipse $9y^2 + 2x^2 = 4$ (5 points)

7. Solve ΔABC if:

(i) $\alpha = 35^o$, $\beta = 62^o$ and a = 5. (10 points)

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(ii) $\gamma = 33^{o}$, a = 8 and b =7. (10 points)

8. If $\underline{a}$ = <1,-6> and $\underline{b}$ = <2,5> find the following:

(i) $\underline{a} + \underline{b}$ and $\underline{a} - \underline{b}$ (5 points)

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(ii) $\underline{a} s \underline{b}$ (5 points)

(iii) the acute angle between $\underline{a}$ and $\underline{b}$

9. Determine m such that $2\underline{i} + 3\underline{j}$ is orthogonal to $\underline{i} - 4m\underline{j}$ (10 points)

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