MAT 182: Trigonometry

Exam 3

Spring 2007

Name: _____

Total Points Earned: _____ **out of 50 total points**

Exam Score: _____

1. (5 points) Find the length of the side b given the following parts of an oblique triangle:

$$a = \frac{2}{\sqrt{6}}, \ \alpha = \frac{\pi}{4}, \ \beta = \frac{\pi}{3}$$

2. (5 points) Find the algebraic representation of $\vec{v}$ given:

$$|\vec{v}| = 5, \ \theta = \frac{3\pi}{2}$$

3. Given the following vectors:
$$\vec{v} = \sqrt{3}\hat{i} - \hat{j} \text{ and } \vec{w} = -2\hat{j}$$

    (a) (5 points) Find $3\vec{v} - \vec{w}$

    (b) (5 points) Find $|\vec{v}|$ and $|\vec{w}|$

    (c) (5 points) Find $\vec{v} \cdot \vec{w}$

    (d) (5 points) Find the angle θ between $\vec{v}$ and $\vec{w}$

4. (2 points) Simplify $-i^3$

5. Given the following complex numbers:

$$z_1 = 2 + 3i, \ and \ z_2 = 3 - 4i$$

(a) (5 points) Simplify $(2i)z_1 + z_2$

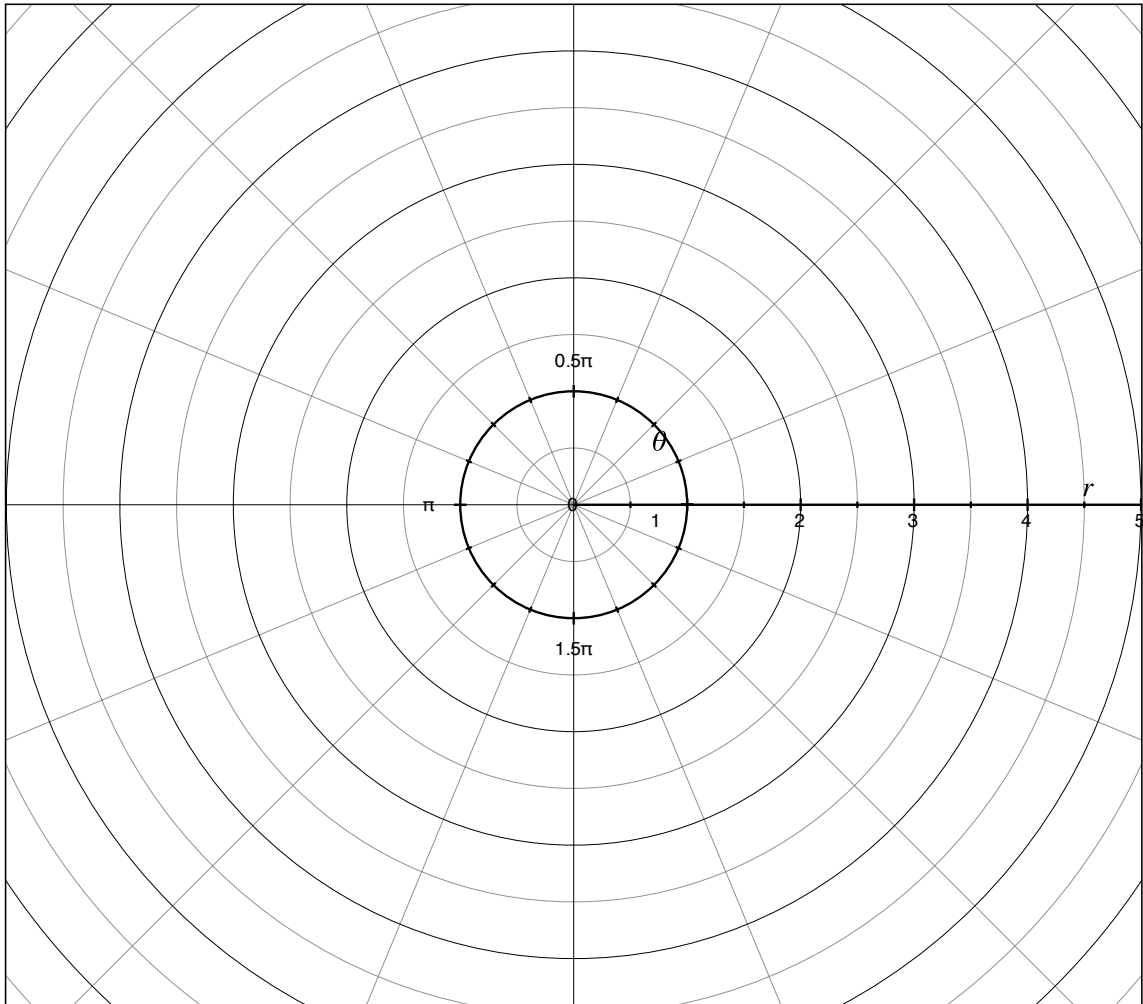(b) (5 points) Simplify $\frac{z_1}{z_2}$

6. (5 points) Convert the following polar equation to rectangular form (write it in terms of x and y.)

$$r = 2\cos\theta$$

7. (3 points) Plot the following polar equation on the grid below:

$$r = 2.5, \; \frac{\pi}{2} \leq \theta \leq \pi$$

Scratch Paper

Colophon: This exam was typeset using LaTeX with the exam package.