Name:

## Precalculus (Math 1045) PRACTICE Midterm Exam II

Professor Paul Bailey November 21, 2008

Turn in this practice exam on Friday, November 21, 2008, for extra credit.

No books, notes, calculators, or other electronic devices will be permitted during the test in class on Friday.

P	1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	Total

# Problem 1. (Wrapping Function)

Find the coordinates of  $P(504^{\circ})$ .

**Problem 2. (Period and Amplitude)** Find  $A, B, C, D \in \mathbb{R}$  such that  $\cos^2 x = A\cos(Bx + C) + D$ . (Hint:  $\cos 2x = \cos^2 x - \sin^2 x$ )

# Problem 3. (Trigonometric Equations)

Find all  $\theta$  with  $0^{\circ} < \theta < 360^{\circ}$  which satisfy the equation

 $2\cos(5\theta) = 1.$ 

Problem 4. (Trigonometric Values)

Find positive integers a, b, and c such that

$$\sec(\frac{\pi}{8} = \sqrt{a - b\sqrt{c}}.$$

### Problem 5. (Triangle Solutions)

A triangle has angles  $\alpha$ ,  $\beta$ , and  $\gamma$ , with opposites sides of length a, b, and c. Let a = 10, b = 7, and  $\gamma = 30^{\circ}$ . Find c.

Problem 6. (Triangular Area)

Find the area of an isosceles triangle with base angle  $30^{\circ}$  and base length 1.

# Problem 7. (Inverse Trigonometric Functions)

Find the exact value of  $\tan(\arcsin(12/13) + \arccos(5/13))$ .

Problem 8. (Algebraic Expressions) Find an algebraic supervision of the function f(n) = content + conten

Find an algebraic expression of the function  $f(x) = \sec(\arcsin(2x-3))$ .

# Problem 9. (Area of a Circular Sector)

The area of a sector of a circle with angle  $72^{\circ}$  is 2. Find the radius of the circle.

Problem 10. (Clocks) Find the fewest number of minutes after midnight that the hands of a clock are pointing in opposite directions.