Name and Student ID: \_\_\_\_

## Survey of Pre-Cal Knowledge

Basic Geometry

1. Define slope for a line.

- 2. What is the slope for each of the following lines?
  - (a) y = 2x 8
  - (b) 3x + 9y 13 = 0
  - (c) A line passing through points (1, 2) and (7, 8).

Basic Algebra

1. Solve the system of equations

$$y = 3x + 6$$
$$y = 4x + 3$$

2. Solve the system of equations

$$y = 3x - 2$$
$$y = x^2$$

3. Solve and sketch the region satisfying  $x^2 - 4x + 3 > 0$  on the real line.

4. Solve and sketch the region satisfying  $y \ge x$  and  $y \le -2x + 1$  on the xy plane.

## Trigonometry

- 1. ? radian =  $360^{\circ}$ .
- 2.  $\cos 0 = ? \sin \frac{\pi}{2} = ? \tan \frac{\pi}{4} = ?$

3. If  $\sin x = \frac{1}{4}$ ,  $\cos x = ?$ ,  $\csc x = ?$   $\cot x = ?$ 

4. if  $\cos x = \frac{1}{3}$ ,  $\sin 2x = ?$ ,  $\tan 2x = ?$ 

5. Sketch the graph of  $y = f(x) = 2\cos(2x) - 1$ .

- 6. List all x so that
  - (a)  $\sin 3x = 0$
  - (b)  $\tan 4x = 1$

## Exponential and Logarithmic Functions

1.  $e \approx ?$ 

A. 4.883 B. 3.141 C. 2.718 D.  $1.602 \times 10^{-19}$ 

- 2. Power rules
  - (a)  $a^n b^n = ?$
  - (b)  $a^x a^y = ?$
  - (c)  $\frac{a^x}{a^y} = ?$

3. Logarithms

(a)  $\log_{10} 25 + \log_{10} 4 = ?$ (b)  $\frac{\ln e^{\frac{3}{2}}}{2} = ?$ 

(b) 
$$\frac{\ln e^{\frac{3}{2}}}{\ln \sqrt{e}} = ?$$

(c)  $\log_3 4 \cdot \log_4 5 \cdot \log_5 9 = ?$