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) $y=2 x-8$
(b) $3 x+9 y-13=0$
(c) A line passing through points $(1,2)$ and $(7,8)$.

Basic Algebra

1. Solve the system of equations

$$
\begin{aligned}
& y=3 x+6 \\
& y=4 x+3
\end{aligned}
$$

2. Solve the system of equations

$$
\begin{aligned}
& y=3 x-2 \\
& y=x^{2}
\end{aligned}
$$

3. Solve and sketch the region satisfying $x^{2}-4 x+3>0$ on the real line.
4. Solve and sketch the region satisfying $y \geq x$ and $y \leq-2 x+1$ on the $x y$ 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 $\cos x=\frac{1}{3}, \sin 2 x=?, \tan 2 x=$ ?
5. Sketch the graph of $y=f(x)=2 \cos (2 x)-1$.

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

## 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) $\frac{\ln e^{\frac{3}{2}}}{\ln \sqrt{e}}=$ ?
(c) $\log _{3} 4 \cdot \log _{4} 5 \cdot \log _{5} 9=$ ?

