232 TEST 1

You may use your notebook during the last fifteen minutes of this exam.
You may NOT use calculators, cell phones, loose papers, or peeking.

Math 232
February 10, 2012

Name: _____

By printing my name I pledge to uphold the honor code.

1. Determine whether each of the following is True (T) or False (F).

(similar to #1 in 5.1–5.5 and 6.1–6.4)

T **F** There are only two angles whose sine is $-\frac{1}{4}$.

T **F** $f(x) = 50 - 2^x$ has a horizontal asymptote at $y = 50$.

T **F** If $\sin^{-1} x = \theta$ then $\sin\theta$ is greater than or equal to zero.

T **F** If $Q(t)$ is exponential with continuous growth rate k, then $Q'(t) = kQ(t)$.

T **F** $3(2^x)$ is equal to 6^x.

T **F** $\ln x = \frac{1}{x}$.

T **F** If $\lim_{h\to 0} \frac{b^h - 1}{h} = 1$, then $b = e$.

T **F** If $\lim_{x\to 2} \ln(f(x)) = 0$, then $\lim_{x\to 2} f(x) = 1$.

T **F** To find the derivative of $\tan x$ we had to use the definition of derivative.

T **F** The graph of $\csc x$ has vertical asymptotes at $x = k\pi$, for any integer k.

2. Circle ALL of the following that are greater than 1, and cross out the others.

(similar skills as #29–36 in 5.1, #67-70 in 6.1, and #23–38 in 6.4)

A) $\tan(\frac{\pi}{13})$ **B)** $e^{0.5}$ **C)** $\ln 3 - \ln 2$ **D)** $\sec^{-1}(-1)$

3. Circle ALL of the following limits that are initially in some indeterminate form, before any algebra or rewriting of any kind, and cross out the rest.

(basic skills in #23–68 in 5.2, TB in 5.5, #23–42 in 6.3, and #45–52 in 6.4)

A) $\lim_{x\to 0}(1+x)^{\frac{3}{x}}$ **B)** $\lim_{x\to\infty} \frac{x^3}{\tan^{-1} x}$ **C)** $\lim_{x\to 0^+} \frac{x}{\ln x}$ **D)** $\lim_{x\to\infty} x^{\ln x}$

4. Fill in the blanks to complete each statement.

(basic skills in #23–68 in 5.2, #17-44 in 5.3, #23–62 in 6.3, and #45–66 in 6.4)

$\lim_{x\to\frac{\pi}{2}^-} \sec x =$ _____ $\quad\quad$ $\frac{d}{dx}(\sec^2 x) =$ _____

$\lim_{h\to 0}(1+h)^{\frac{1}{h}} =$ _____ $\quad\quad$ $\frac{d}{dx}(\ln|x|) =$ _____

$\lim_{x\to 0^+} \csc 3x =$ _____ $\quad\quad$ $\frac{d}{dx}(2^{3x+1}) =$ _____

$\lim_{x\to 0} \tan^{-1} x =$ _____ $\quad\quad$ $\frac{d}{dx}(\sin^{-1}(x^3)) =$ _____

$\lim_{x\to 0} \frac{2}{4+e^{-2x}} =$ _____ $\quad\quad$ $\frac{d}{dx}(\ln(x^5+1)) =$ _____

5. Circle ALL of the following that are equal to $\dfrac{\tan^{-1} x}{\sin^{-1} x}$, and cross out the rest.

(similar skills as #51 in 6.4)

A) $\dfrac{\cot x}{\csc x}$ $\quad$ **B)** $\left(\dfrac{\tan x}{\sin x}\right)^{-1}$ $\quad$ **C)** $\dfrac{\sin x}{\tan x}$ $\quad$ **D)** $\dfrac{\arctan x}{\arcsin x}$

6. Circle ALL of the following that FAIL to be in the domain of $f(x) = \frac{1}{\sqrt{\ln(x-2)}}$, and cross out the rest. *(similar to #43 in 5.1)*

A) $x = 0$ $\quad$ **B)** $x = 1$ $\quad$ **C)** $x = 2$ $\quad$ **D)** $x = 3$

7. Circle ALL of the following that are valid trigonometric identities, and cross out the rest. *(similar to #5–8, #9–12, and #44-49 in 6.2)*

A) $\csc(-\theta) = -\csc(\theta)$

B) $2\sin^2\theta - \cos 2\theta = 1$

C) $\sin\theta\cos\theta = 1 + \cos\theta$

D) $1 - \cos^2\theta = \sin^2\theta$

8. Circle the ONE answer that is equal to $\lim_{x\to\frac{\pi}{2}} \dfrac{\sin(\cos x)}{\cos x}$, and cross out the rest.

(similar to #15 in chapter 6 review)

A) -1 $\quad$ **B)** 1 $\quad$ **C)** ∞ $\quad$ **D)** 0

sCRAP (I will not be grading anything on the scrap page but you must hand it in with your name on it)

STRESSED OUT?
TAKE A BREAK TO COLOR INFINITY: ∞ ∞ ∞ ∞ ∞ ∞ ∞ ∞ ∞ ∞ ∞ ∞ ∞ ∞ ∞ ∞ ∞ ∞