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) \(\tan\left(\frac{\pi}{13}\right)\)  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)

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

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

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

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

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

5. Circle ALL of the following that are equal to \( \frac{\tan^{-1} x}{\sin^{-1} x} \), and cross out the rest.
(similar skills as #51 in 6.4)

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

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) \( x = 0 \)  B) \( x = 1 \)  C) \( x = 2 \)  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) \( \csc(-\theta) = -\csc(\theta) \)  C) \( \sin \theta \cos \theta = 1 + \cos \theta \)

B) \( 2 \sin^2 \theta - \cos 2\theta = 1 \)  D) \( 1 - \cos^2 \theta = \sin^2 \theta \)

8. Circle the ONE answer that is equal to \( \lim_{x \to \frac{\pi}{2}^-} \frac{\sin(cos x)}{\cos x} \), and cross out the rest.
(similar to #15 in chapter 6 review)

A) \( -1 \)  B) \( 1 \)  C) \( \infty \)  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: ∞ ∞ ∞ ∞ ∞ ∞ ∞ ∞ ∞ ∞ ∞ ∞ ∞ ∞ ∞ ∞ ∞ ∞ ∞