

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: *key* VI
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 $-\frac{1}{4}$.
- 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.
- 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 $\ln x = \frac{1}{x}$.
- F If $\lim_{h \rightarrow 0} \frac{b^h - 1}{h} = 1$, then $b = e$.
- F If $\lim_{x \rightarrow 2} \ln(f(x)) = 0$, then $\lim_{x \rightarrow 2} f(x) = 1$.
- T F To find the derivative of $\tan x$ we had to use the definition of derivative.
- F The graph of $\csc x$ has vertical asymptotes at $x = k\pi$, for any integer k .

2 each
↓
20 pts

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)

2 each
→ 8 pts

- ~~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)

8 pts

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

36

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)

$$\lim_{x \rightarrow \frac{\pi}{2}^-} \sec x = \infty$$

$$\frac{d}{dx}(\sec^2 x) = 2 \sec x \cdot \sec x \tan x$$

$$\lim_{h \rightarrow 0} (1+h)^{\frac{1}{h}} = e$$

$$\frac{d}{dx}(\ln|x|) = \frac{1}{x}$$

$$\lim_{x \rightarrow 0^+} \csc 3x = \infty$$

$$\frac{d}{dx}(2^{3x+1}) = (\ln 2) 2^{3x+1} (3)$$

$$\lim_{x \rightarrow 0} \tan^{-1} x = 0$$

$$\frac{d}{dx}(\sin^{-1}(x^3)) = \frac{1}{\sqrt{1-(x^3)^2}} (3x^2)$$

$$\lim_{x \rightarrow 0} \frac{2}{4 + e^{-2x}} = \frac{2}{5}$$

$$\frac{d}{dx}(\ln(x^5 + 1)) = \frac{1}{x^5 + 1} (5x^4)$$

3 pts each
↓
30 pts

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) $\frac{\cot x}{\csc x}$~~

~~B) $\left(\frac{\tan x}{\sin x}\right)^{-1}$~~

~~C) $\frac{\sin x}{\tan x}$~~

D) $\frac{\arctan x}{\arcsin x}$

8 pts

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) $x = 3$

8 pts

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 pts

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

(similar to #15 in chapter 6 review)

A) -1

B) 1

C) ∞

D) 0

8 pts

+2 free

62 + 2 = 64