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)

$$\lim_{x \to \frac{\pi}{2}^{-}} \sec x = \underline{\hspace{1cm}}$$

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

3 ptr each

$$\lim_{h \to 0} (1+h)^{\frac{1}{h}} = \underline{\quad e}$$

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

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

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

$$\lim_{x \to 0} \tan^{-1} x = \underline{\qquad}$$

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

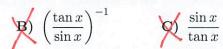
$$\lim_{x \to 0} \frac{2}{4 + e^{-2x}} = \frac{2}{5}$$

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

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)







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

$$(\mathbf{A})x = 0$$

$$(B)$$
  $x = 1$ 

$$(C)$$
  $x=2$ 

$$(D)x = 3$$

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

$$\mathbf{A})\csc(-\theta) = -\csc(\theta)$$

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

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

$$\mathbf{D}) - \cos^2 \theta = \sin^2 \theta$$

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)

+2 free 62+2=61

## 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

printing my name I bledge 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** If  $\lim_{h \to 0} \frac{b^{h} 1}{h} = 1$ , then b = e.
- $\mathbf{T} \quad \mathbf{F} \quad \text{If } \lim_{x \to 2} \ln(f(x)) = 0, \text{ then } \lim_{x \to 2} f(x) = 1.$
- 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  $6^x$ .
- $\mathbf{T} \quad \widehat{\mathbf{F}} \quad \ln x = \frac{1}{x}.$
- To find the derivative of  $\tan x$  we had to use the definition of derivative.
- **T** The graph of  $\csc x$  has vertical asymptotes at  $x = k\pi$ , for any integer k.
- 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.
- 2. 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)

2 each

- **A**) ∞
- B) -1
- **C**) 0
- (D) 1
- 3. 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.

80/1

- (A)x = 2
- (B) x=0
- (C) x = 3
- (D)x = 1