Math 1A (9:30am – 10:20am)
Quiz 1 Version G
Mon Apr 11, 2011

NAMES YOU ASKED TO BE CALLED IN CLASS:

_____ & _____

SCORE: ___ / 20 POINTS

NO CALCULATORS ALLOWED

SHOW PROPER ALGEBRAIC WORK (INCLUDING ALL IDENTITIES USED)
USE PROPER NOTATION & SIMPLIFY ALL ANSWERS WHERE REASONABLE

Find $\lim_{x\to 0^+} \coth x$. **Do NOT use a graph. Give algebraic or numerical reasoning, as shown in class.** SCORE: ___ / 2 POINTS

SEE 7:30 VERSION R

State the definition of "area under a function" given in class. SCORE: ___ / 2 POINTS
Use complete sentences and proper algebra & English as shown in class.

SEE 7:30 VERSIONS

Using the definition of "area under a function" given in class, write an algebraic expression for the area under $f(x) = \sin 3x$ over the interval $[2, 9]$. **Do NOT evaluate the expression. You do NOT need to draw a graph to explain your answer.** SCORE: ___ / 2 POINTS

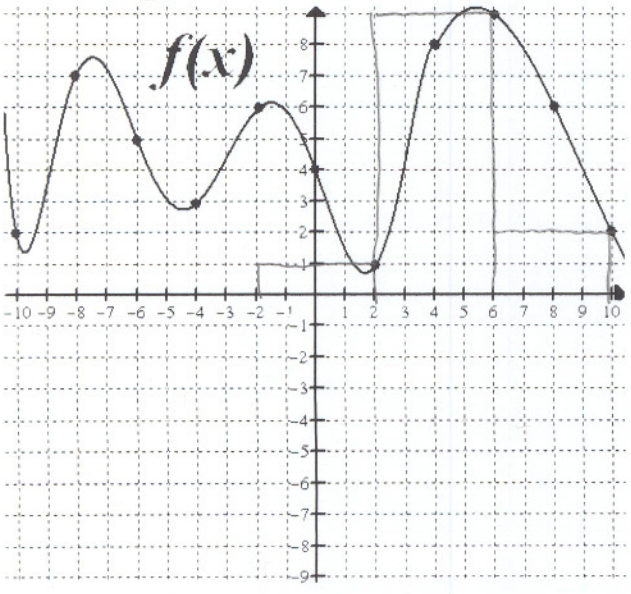
$$\lim_{n\to\infty} \sum_{i=1}^{n} \sin 3\left(2 + \frac{7i}{n}\right) \cdot \frac{7}{n}$$

OR $\sum_{i=0}^{n-1}$

MULTIPLE CHOICE: CIRCLE THE CORRECT ANSWER SCORE: ___ / 2 POINTS

For the function f on the interval $[-2, 10]$, A_3 using the right hand sum (known as R_3 in your textbook) equals

[a] 48 [b] 52 [c] 56 [d] 60 [e] 64 [f] none of the above



$\Delta x = \frac{10 - -2}{3} = 4$

$4(1 + 9 + 2) = 48$

Find $\frac{d}{dx}\cosh^{-1}(\coth x)$. **SCORE: ___ / 3 POINTS**

$\frac{1}{\sqrt{\coth^2 x - 1}} \cdot -\operatorname{csch}^2 x = \frac{1}{\sqrt{\operatorname{csch}^2 x}} \cdot -\operatorname{csch}^2 x$

$= \frac{1}{|\operatorname{csch} x|} \cdot -\operatorname{csch}^2 x = \pm \operatorname{csch} x$

ACTUAL ANSWER IS $-\operatorname{csch} x$

If $\sinh x = -4$, find $\cosh 2x$, **using identities**. **SCORE: ___ / 3 POINTS**

Do NOT use the logarithmic formula for any inverse hyperbolic functions.

$\cosh 2x = 2\sinh^2 x + 1$

$= 2(-4)^2 + 1$

$= 33$

OR

OR

$\cosh^2 x - \sinh^2 x = 1$

$\cosh^2 x - (-4)^2 = 1$

$\cosh^2 x = 17 \Rightarrow \cosh x = \sqrt{17}$

$\cosh 2x = \cosh^2 x + \sinh^2 x = 33$

OR $= 2\cosh^2 x - 1$

$= 33$

OR

Prove the logarithmic formula for $\tanh^{-1} x$. **SCORE: ___ / 3 POINTS**

SEE 7:30 VERSIONS

Prove the derivative of $\sinh^{-1} x$. **Do NOT use the logarithmic formula for** $\sinh^{-1} x$. **SCORE: ___ / 3 POINTS**

SEE 7:30 VERSION K