

MATH 152
Mrs. Bonny Tighe

QUIZ 3
7.5-7.7
25 points

NAME _____

SECTION _____ Wed 9/21/05

1. Differentiate the following.

a) $y = \cosh^{-1}(\cos^{-1} \sqrt{x})$

b) $f(x) = \arctan(\csc x)$

c) $f(x) = \sin^{-1}(x^3)$

d) $f(x) = (\cos^{-1} x)(\tanh^{-1} x)$

2. Find the numerical value of each expression:

a) $\cos(\sin^{-1} \sqrt{3}/2) =$ _____ b) $\sinh(0) =$ _____ c) $\cos^{-1}(1) =$ _____

3. Simplify: a) $\sin(\tan^{-1} 5/12) =$ _____ b) $\sin(\tan^{-1} x) =$ _____

4. Evaluate: a) $\int \frac{\tan^{-1} x}{1+x^2} dx =$ _____

b) $\int \frac{e^{2x}}{\sqrt{1-e^{4x}}} dx$

$$c) \int \frac{1}{x\sqrt{9x^2-1}} dx = \underline{\hspace{2cm}}$$

$$d) \int_0^1 \frac{1}{\sqrt{16x^2+1}} dx = \underline{\hspace{2cm}}$$

5. Find the limit. Use L'Hospital's Rule where appropriate. If there is a more elementary method, consider using it. If L'Hospital's Rule doesn't apply, explain why.

$$a) \lim_{x \rightarrow 0^+} (\tan 3x)^x = \underline{\hspace{2cm}} \quad b) \lim_{x \rightarrow \infty} \frac{x^3}{e^x} = \underline{\hspace{2cm}} \quad c) \lim_{t \rightarrow 0} \frac{1-e^{2t}}{t} = \underline{\hspace{2cm}}$$

$$d) \lim_{x \rightarrow 0^+} x \ln x = \underline{\hspace{2cm}}$$

$$e) \lim_{x \rightarrow \infty} \left(\frac{x+1}{x+2} \right)^x = \underline{\hspace{2cm}}$$