

Assignment #4**Name** _____**Due 9 February 2010**

1. Find the exact values in each case:

(a) $\sin^{-1}(-1/2)$

(b) $\sin^{-1}(\sin(20\pi/3))$

(c) $\tan(\tan^{-1}(16))$

(d) $\cos(\sin^{-1}(.3) + \cos^{-1}(.2))$

2. Evaluate $\lim_{x \rightarrow +\infty} e^{-2x} \sinh(x)$.

3. Evaluate the following integrals:

(a) $\int \frac{e^x}{\sqrt{1 - e^{2x}}} dx$

(b) $\int_0^3 \frac{1}{9 + x^2}$

4. Let $y = \tan^{-1}(x) + \ln \left(\sqrt{\frac{x-1}{x+1}} \right)$. Show that $y' = \frac{2x^2}{x^4 - 1}$.

5. Show that $\frac{1 + \tanh(x)}{1 - \tanh(x)} = e^{2x}$.