Name: Section: 5 6 9 10

1. Find the following values.

   (a) $\log_3(\frac{1}{27})$

   (b) $\cos^{-1}(\frac{1}{\sqrt{2}})$

   (c) $\tan^{-1}(-\sqrt{3})$

2. Differentiate the following functions.

   (a) $f(x) = \ln(\sin^{-1}(x)) + \sec^{-1}(\sqrt{x})$.

   (b) $y = \arctan(2e^x)$.

3. Suppose you have a 100mg sample of cesium-137. The half-life of cesium-137 is 30 years. Find the mass of the sample after 72 years.

4. Evaluate the following integrals.

   (a) Find $\int \frac{2x}{1+x^4}\,dx$. *Hint*: let $u = x^2$.

   (b) Evaluate $\int \frac{1}{\sqrt{9-4x^2}}\,dx$. *Hint:* factor 3 out of the denominator and let $u = \frac{2}{3}x$.