Math 175-004 **In Class Assignment 1** **Feb. 21, 2008**

Names:_____

1. **Integration by parts** Compute the following integrals:

   (a) $\int x \csc^2 x dx$

   (b) $\int t \sin^{-1} t^2 dt$

2. **Trigonometric Integrals** Compute the following integrals:

(a) $\int_0^{\pi/2} \sin^3 x \cos^9 x dx$

(b) $\int_0^{\pi} \theta\sqrt{1-\cos\theta} d\theta$

(c) Show

$$\int_{-\pi}^{\pi} \sin mx \sin nx dx = \begin{cases} 0 & \text{if } n \neq m, \\ \pi & \text{if } n = m \end{cases}$$