

**MATH 166**  
**SUMMER 2012**  
**QUIZ 5**

1. Evaluate the following integrals.

a) (5 pt)  $\int_1^e x^2 \ln(x) dx$ .

b) (5 pt)  $\int x \tan^{-1}(ax) dx, a \neq 0$ .

c) (5 pt)  $\int \sin(2x) \cos(3x) dx$ .

2. (5 pt) Find the volume obtained when the region bounded by the  $y$ -axis,  $f(x) = \sin(x)$  and  $g(x) = \cos(x)$ ,  $0 \leq x \leq a$  (where  $a$  is the first positive intersection point of  $\sin(x)$  and  $\cos(x)$ ) is revolved about the  $y$ -axis.