Math 276 Discussion Worksheet 5

1. Evaluate the following integrals.

a. $\displaystyle\int \frac{x+\log x}{x}dx$ **b***. $\displaystyle\int_0^{\pi/2} \frac{\cos x}{2-\cos^2 x}dx$

2. Evaluate the following integrals.

a. $\displaystyle\int_1^e x\log x dx$ **b**. $\displaystyle\int e^x \cos x dx$

3. Evaluate the following limits.

a. $\displaystyle\lim_{x\to 0}\frac{1-\cos(x)}{\tan^2(x)}$ **b**. $\displaystyle\lim_{x\to\infty}(0.99)^x x^{99}\sin(x^{99})$

4. Find the derivative of the following functions.

a. $f(x)=(\log x)^x$ **b**. $g(x)=\displaystyle\int_{\arctan x}^{\arccos x} e^t dt$