

## Math 276 Discussion Worksheet 2

1. Evaluate the following integrals by the method of substitution.

a.  $\int_0^1 x\sqrt{1-x^2}dx$       b.  $\int \cos^3 x dx.$

2. Use integration by parts to evaluate the following integrals

a.  $\int_0^{2\pi} x \cos(nx)dx$       b.  $\int \sin x \cos x dx.$

3. Evaluate the following integrals.

a.  $\int \frac{1}{x(\log x)(\log(\log x))} dx$       b.  $\int xe^x dx.$

## Hints

1. For part b, write  $\cos^3 x = (1 - \sin^2 x) \cos x$ .
2. For part a, let  $u = x$ ,  $dv = \cos(nx)dx$ .
3. For part a, use the substitution  $u = \log(\log x)$ . For part b, let  $u = x$ ,  $dv = e^x dx$  and integrate by parts.