Assignment 2 ***Math 181*** ***Name:***

1. Integrate the following:

a) $\int \left(3x^3 - 2x + 7\right) e^{2-3x}\, dx$

b) $\int \left(7x^3 - 5x^2 - 4\right) \sin\left(3x\right) dx$

c) $\int \left(\sqrt[3]{x^2} - 3\sqrt{x} - 2\right) \ln\left(4x\right) dx$

d) $\int \sin^{-1}(4x)\,dx$

e) $\int e^{3x+2}\cos(5x)\,dx$

f) $\int \ln(4x-3)\,dx$

g) $\int x \tan^{-1}(3x)\,dx$

h) $\int e^{\sqrt{x}}\,dx$

i) $\int \sin(\ln x)\,dx$

2. Prove the following reduction formulas:

a) $\int \cos^n x\,dx = \frac{1}{n}\cos^{n-1} x \sin x + \frac{n-1}{n}\int \cos^{n-2} x\,dx$

b) $\int (\ln x)^n\,dx = x(\ln x)^n - n\int (\ln x)^{n-1}\,dx$

c) $\int \sec^n(x)\,dx = \frac{\sec^{n-2} x \tan x}{n-1} + \frac{n-2}{n-1}\int \sec^{n-2} x\,dx$

3. Use problem (2) to evaluate the following:

a) $\int \cos^5(5x)\,dx$

c) $\int \left[\ln(5x)\right]^3\,dx$

d) $\int \sec^5(4x)\,dx$