Methods of Calculus Math 1225B, 2st Assignment
Due Monday July 7th in class

1. Compute:

   a) $\frac{d}{dx}(\cos\sqrt{x^2+5x})$ *b)* $\frac{d}{dx}(e^{\sin x})$ *c)* $\frac{d}{dx}(\tan(x^2+2^x))$ *d)* $\frac{d}{dx}(x^5\sec e^x)$

2. Compute:

   a) $\frac{d}{dx}(e^x\arcsin(2x))$ *b)* $\frac{d}{dx}(\arctan(x^2))$

3. Compute the following indefinite integrals (anti-derivatives):

   a) $\int(2x^5+6x^2+4)\,dx$ *b)* $\int(\frac{1}{x}+\frac{1}{1+x^2})\,dx$ *c)* $\int(\sin x+\tan x\sec x)\,dx$

4. Compute the following indefinite integrals (anti-derivatives) using the substitution method:

   a) $\int 5(5x+3)^{10}\,dx$ *b)* $\int\frac{x^3}{\sqrt{5x^4+15}}\,dx$ *c)* $\int\frac{1}{x(\ln x)^3}\,dx$
   d) $\int\sec^2(5x+10)\,dx$ *e)* $\int\sin x\cos^2 x\,dx$ *f)* $\int x^2e^{-x^3}\,dx$

5. Evluate

   a) $\int_2^5(2x^2+5)\,dx$ *b)* $\int_0^{1/\sqrt{3}}\frac{dx}{1+x^2}$ *c)* $\int_0^{\pi/4}\sin x\,dx$ *d)* $\int_{-1}^0 xe^{-x^2}\,dx$