Math 118 Winter 2015 Homework 2 Solutions

Due Thursday Jan. 22 3pm in Assignment Box

Question 1. (12 pts) *Calculate the following indefinite integrals through change of variables. Please provide enough details.*

a) (4 pts) $\int x^2\sqrt{1-x^2}\,\mathrm{d}x$;

b) (4 pts) $\int \sqrt{\dfrac{x}{1-x}}\,\mathrm{d}x$;

c) (4 pts) $\int \dfrac{\mathrm{d}x}{\sqrt{1-\sin^4 x}}$.

Question 2. (8 pts) *Calculate the following indefinite integrals through integration by parts (note change of variables may be needed at certain steps). Please provide enough details.*

a) (2 pts) $\int \ln(1+x^2)\,\mathrm{d}x$;

b) (2 pts) $\int x^2 e^{-x}\,\mathrm{d}x$;

c) (2 pts) $\int \sqrt{x}\ln^2 x\,\mathrm{d}x$;

d) (2 pts) $\int \dfrac{x}{\cos^2 x}\,\mathrm{d}x$;