MT110: Calculus and Analytic Geometry

Worksheet 14

Due 3:15 pm, Fri Dec 14

fall 2018

Roll# Student 1: _____ Roll# Evaluator 1: _____

Roll# Student 2: _____ Roll# Evaluator 2: _____

Problem 1 [80 Marks]

Solve each of the following integrals. Also specify the intervals of x on which the indefinite form of the integral is valid in each case. (Hint: What type of functions can be integrated according to the fundamental theorem of calculus?)

a) $\int (x^3 + 2x)\cos x \, dx$ [8 Marks]

b) $\int \sin^3 t \cos^4 t \, dt$ [8 Marks]

c) $\int_0^{\pi} \sin^2 t \cos^5 t \, dt$ [8 Marks]

d) $\int_0^{\pi} \sin^2 t \cos^4 t \, dt$ [8 Marks]

e) $\int x \sec x \tan x \, dx$ [8 Marks]

f) $\int \csc^4 x \cot^6 x \, dx$ [8 Marks]

g) $\int \cos(\pi x)\cos(4\pi x) \, dx$ [8 Marks]

h) $\int_0^1 x^3\sqrt{1-x^2} \, dx$ [8 Marks]

i) $\int_0^1 \frac{t^5}{\sqrt{t^2+4}} \, dt$ [8 Marks]

j) $\int_0^{\pi/2} \frac{\cos t}{\sqrt{1+\sin^2 t}} \, dt$ [8 Marks]

Problem 2

Turn of your PCs and place the chairs in their proper positions.