MT110: Calculus and Analytic Geometry

Worksheet 15

Due 3:10 pm, Fri Dec 21

fall 2018

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

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

Note: Attempt the questions in a proper sequence.

Problem 1 _____ /[12 × 6 = 72 marks]

Evaluate the following integrals wherever possible. Use the cover-up method where appropriate to save time.

(i)
$$\int \frac{2x+5}{(2x+1)(x-2)^2}dx$$

(ii)
$$\int \frac{x^4}{x^3+2x^2+x+2}dx$$

(iii)
$$\int \frac{x}{x^2+4x+13}dx$$

(iv)
$$\int \frac{e^x}{(e^x-2)(e^{2x}+1)}dx$$

(v)
$$\int_{-\infty}^{0} 2^x \, dx$$

(vi)
$$\int_2^4 \frac{1}{3-x}dx$$

Problem 2 _____ /[8 marks]

Determine whether $\int_3^{\infty} \frac{1}{(x-2)^{3/2}} \, dx$ converges or diverges. Explain.

Problem 3

Turn off your PCs and place the chairs in their proper positions