

MAT1332 Spring/Summer 2010

Assignment 1, Due May 18, 2010.

You must justify your answers to all of the questions below.

1. Evaluate the following definite integrals.

(a) $\int_{-2}^2 (u^2 - 2u^4) du.$

(b) $\int_{-\pi/2}^{\pi/2} (2x - 5 \cos x) dx.$

(c) $\int_0^1 2 \sin(\pi(4 - 3x)) dx.$

(d) $\int_{-2}^2 x^2 e^x dx.$

(e) $\int_{1/5}^{2/5} \frac{2}{1 - 2t} dt.$

2. Calculate the following integrals using the method of partial fractions.

(a) $\int_3^4 \frac{2x - 1}{x^2 - 3x + 2} dx.$

(b) $\int_{-2}^{-1} -\frac{8x^2 - 10x - 1}{x(2x - 1)^2} dx.$

(c) $\int_2^5 \frac{1}{2x^2 - 8x + 12} dx.$

3. In each of the following cases, find the area of the region bounded by the graphs of the functions f and g between $x = a$ and $x = b$, and draw a graph of the figure.

(a) $f(x) = x^2, g(x) = 4, a = -2, b = 2.$

(b) $f(x) = e^x, g(x) = 1 + 2x, a = 0, b = 1.$

(c) $f(x) = \cos x, g(x) = 1/2, a = 0, b = 2\pi.$