

1439 - 1440 H (Summer semester)

Question 1 : (3+3+3)

Evaluate the following integrals

1. $\int \frac{1}{2x\sqrt{1-9x^2}} dx$

2. $\int 4x \cos(2-3x) dx$

3. $\int \sec^9 x \tan^5 x dx$

Question 2 : (3+3+3)

1. Evaluate the following integral.

$$\int \frac{x+1}{x(x^2+4)} dx$$

2. Determine if each of the following integral is convergent or divergent. If it is convergent find its value.

a) $\int_{-\infty}^0 \frac{1}{\sqrt{3-x}} dx,$

b) $\int_0^3 \frac{1}{\sqrt{3-x}} dx$

Question 3 : (3+4)

1. Evaluate the following limit. $\lim_{x \rightarrow 0^+} x \ln x$

2. Determine the area of the region bounded by

$$y = 2x^2 + 10 \quad \text{and} \quad y = 4x + 16.$$