

Full Name:

ID:

Section:

Serial number:

Question 1 Find the partial fraction decomposition of

$$\frac{x^8 + 7}{(x^3 + 6x^2 + 12x + 8)(x^2 + 4)^2(x^2 + x - 1)}$$

Question 2 Evaluate the following integrals (if possible):

a) $\int \frac{\sqrt{x^2 - 4x}}{(x-2)^2} dx$

$$b) \int_{-\infty}^0 \frac{3x}{(5x^2 + 6)^2} dx$$

$$c) \int_2^{\infty} \frac{1}{x \ln x} dx$$

$$d) \int_1^5 \frac{1}{x^2 - x} dx$$

$$e) \int \frac{3x^2 + 7x + 32}{(x - 2)(x^2 + 6x + 13)} dx$$