

Group A.

Ex. 1 Integrate by parts $\int e^x \cos x dx$. (3 points)

Ex. 2 Integrate a polynomial function $\int \frac{dx}{x^2-2x+6}$. (3 points)

Ex. 3 Integrate a trigonometric function $\int \sin(3x) \sin(2x + \pi) dx$. (3 points)

Ex. 4 Calculate the volume of a solid of a revolution given by the function $-x^2 + 2$ in the interval of $[-\sqrt{2}, 0]$.

Draw the diagram. (3 points)

Ex. 5 List two applications of a definite integral other than one used in Exercise 4. (3 points)

Group B.

Ex. 1 Integrate by parts $\int x^2 e^x dx$. (3 points)

Ex. 2 Integrate a polynomial function $\int \frac{dx}{x^2-10x+21}$. (3 points)

Ex. 3 Integrate a trigonometric function $\int \cos(4x + \pi) \sin(2x) dx$. (3 points)

Ex. 4 Calculate the shaded area. (3 points)

Ex. 5 List two applications of a definite integral other than one used in Exercise 4. (3 points)

