

Definite Integral Concept

45. Calculate the area of the region bounded by the curve $y = x^2 - 5x + 6$ and the two coordinate axes.

46. Compute:

$$\int_{-1}^2 |x^2 - 1| dx$$

and explain its geometric meaning.

47. Compute:

$$\int_{-2}^1 |x^2 - x| dx$$

and explain its geometric meaning.

48. Compute:

$$\int_{-1}^2 |x^3 - x| dx$$

and explain its geometric meaning.

49. Compute the following definite integral:

$$\int_0^2 \frac{e^x}{e^{2x} + 1} dx.$$

Integral as a Function of the Upper Limit

50. Find the indefinite integral of the function $f(t) = \cot t$ such that its value at $t = \frac{\pi}{4}$ is 0.

Areas of Regions

51. The region L is bounded by the lines $x = 1$, $x = e^2$, the function $y = \frac{\ln x}{x^2}$, and the x -axis. Compute the area of region L .

52. Calculate the area of the closed region enclosed by the curves $y = x^2 + 4x$ and $y = x + 4$.

53. Find the area of the region bounded by the parabola $4y = 8x - x^2$ and the line $4y = x + 6$.

All above math problems are taken from the following website:

<https://osebje.famnit.upr.si/~penjic/teaching.html>.

THE READER CAN FIND ALL SOLUTIONS TO THE GIVEN PROBLEMS ON THE SAME PAGE.