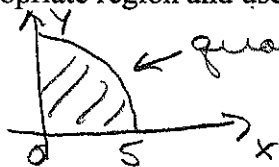


Mathematics 126

Fourth 5.2

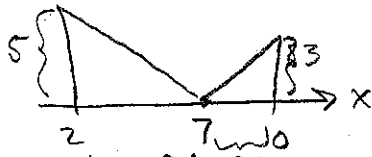
1. Sketch the appropriate region and use geometry to calculate the integral

$$I = \int_0^5 \sqrt{25 - x^2} dx$$



$$I = A = \frac{1}{4} \pi r^2 = \frac{1}{4} \pi 5^2 = \frac{25\pi}{4}$$

$$J = \int_2^{10} |x - 7| dx$$



$$J = A = \frac{25}{2} + \frac{9}{2} = 17$$

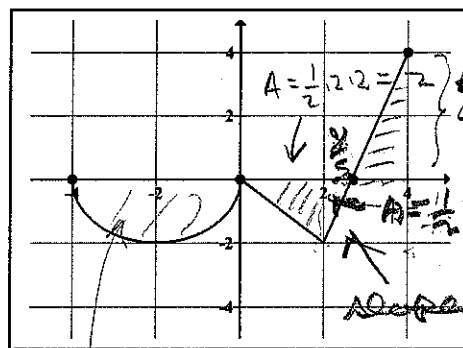
$$A = \frac{1}{2} \cdot 5 \cdot 5 = \frac{25}{2}, \quad A = \frac{1}{2} \cdot 3 \cdot 3 = \frac{9}{2}$$

2. For the function $f(x)$ as graphed consisting of a semicircle and line segments, find the following:

$$\int_{-4}^0 f(x) dx = -2\pi$$

$$\int_{-2}^2 f(x) dx = -\pi - 2$$

$$\int_0^4 f(x) dx = -2 - \frac{2}{3} + \frac{8}{3} = 0$$

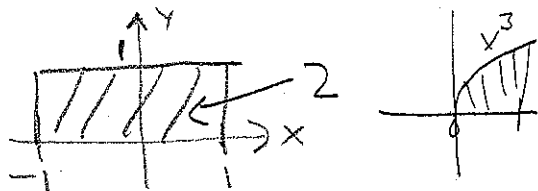


$$A = \frac{1}{2} \pi r^2 = \frac{1}{2} \pi 2^2 = 2\pi$$

3. Calculate the following integrals

$$\begin{aligned} \int_{-1}^2 (3x^2 - 2x + 1) dx &= \left[x^3 - x^2 + x \right]_{-1}^2 \\ &= 8 - 4 + 2 - (-1 - 1 - 1) = 9 \end{aligned}$$

$$\int_{-1}^1 (1 + |x^3|) dx = 2 + 2 \int_0^1 x^3 dx = 2 + 2 \cdot \frac{1}{4} = 2.5$$



14 Understand the methods so you can solve similar problems.
Understand the concepts so you can solve unfamiliar problems.

Study the (a) class notes, (b) text examples, (c) do the text exercises, (d) do the 4th hour problems and (e) read the next text section.