

1.	Find the average value of $f(x) = \sin x$ on the interval $\left[0, \frac{\pi}{4}\right]$.
2.	Approximate $\int_0^4 (x^2 + 2) dx$ using 4 subintervals by: a) Left-endpoint rectangles b) Right-endpoint rectangles c) Trapezoids d) Midpoint rectangles e) find the exact value of the integral
3.	Find the area between the following curves: $y = \sqrt[3]{x}$ and $y = x$.
4.	Calculate the area between the parabolas $y = 25 - x^2$ and $y = x^2 - 25$.
5.	Find the value of k such that the following function is continuous for all real numbers. $f(x) = \begin{cases} kx - 1, & x < 2 \\ kx^2, & x \geq 2 \end{cases}$
6.	Find the area of the region enclosed by the graphs of $y = x^2$ and $y = 2x + 3$.
7.	Find the area between the curve $y = \sin 3x$ and the x -axis from $x = 0$ to $x = \frac{\pi}{3}$.
8.	Write, but do not evaluate, the integral expression that can be used to find the area between the curves of $x + 2 = y^2$ and $y = x$.
9.	For what value of c is $f(x) = \begin{cases} 3x^2 + 2, & x \geq -1 \\ -cx + 5, & x < -1 \end{cases}$ continuous?
10.	Find the average value of $y = \sec^2 x$ on $\left[0, \frac{\pi}{4}\right]$.

Answers

1. $\left(-\frac{\sqrt{2}}{2} + 1\right) \frac{4}{\pi}$	2. 22; 38; 30; 29; $\frac{88}{3}$	3. $\frac{1}{2}$	4. $\frac{1000}{3}$	5. $-\frac{1}{2}$
6. $\frac{32}{3}$	7. $\frac{2}{3}$	8. $\int_{-1}^2 [y - (y^2 - 2)] dy$	9. 0	10. $\frac{4}{\pi}$