

Area Under the Curve

1. Area of the region bounded by the curve $y = e^x$ and the lines $x=0$ and $y=e$ is
 a) $e-1$ b) $\int_1^e \log(e+1-y)dy$ c) $e - \int_0^1 e^x dx$ d) $\int_0^e \log y dy$
2. Sketch the region bounded by the curves $y = x^2$ and $y = \frac{2}{1+x^2}$. Find its area.
 Ans: $\pi - \frac{2}{3}$
3. Sketch the region bounded by the curves $y = \sqrt{5-x^2}$ and $y = |x-1|$ and find its area. Ans: $\frac{5\pi}{4} - \frac{1}{2}$
4. Find the area bounded by the x-axis, part of the curve $y = \left(1 + \frac{8}{x^2}\right)$ and the ordinates $x=2$ and $x=4$. Ans: 4
5. Show that the area bounded by the curve $y = 2x - x^2$ and the straight line $y = -x$ is $\frac{9}{2}$ sq.unit
6. Find the area bounded by the curves $y = x-1$ and $(y-1)^2 = 4(x+1)$. Ans: $\frac{64}{3}$ sq.unit
7. Find the area enclosed by the parabola $y^2 = 2x$ and the two tangents drawn at the points $(2,2)$ and $(2,-2)$.
8. Find the area enclosed by the curve $|x| + |y| = 1$.
9. Find the area enclosed between the curves $y = e^{-x}$, $y = \log_e(x+e)$ and the x-axis. Ans: 2 sq.units
10. Find the area bounded by the curves $|x| + |y| = 1$ and $y = |x|$.

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