
Please show your work!

- 1) Evaluate the integral by $\int_0^{\sqrt{x}/2} x \sec^2(x^2) dx$.
- 2) Find the area enclosed by the curves $y = x^2 + 1$, $y = 3 - x^2$, $x = -1$ and $x = 2$.
- 3) The base of a solid S is the region enclosed by the curves $y = x^2$, $y = 0$ and $x = 1$. If the cross sections of S perpendicular to the x-axis are squares, then find the volume of S .