Math 102

Quiz#2

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Name:

ID No.:

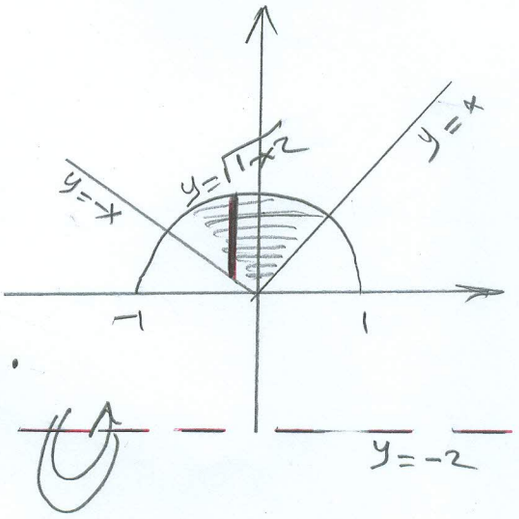
Serial No.:

1. **Find the volume of the solid enclosed by the graph of** $y = \sqrt{1-x^2}$ and $y = |x|$, and is revolved about the axis $y = -2$. (Just set up the integral formula)

By washers Method:

$$V = \int_{-1}^{0} \pi\left[\left(\sqrt{1-x^2}+2\right)^2 - (-x+2)^2\right]dx$$

$$+ \int_{0}^{1} \pi\left[\left(\sqrt{1-x^2}+2\right)^2 - (x+2)^2\right]dx.$$



By cylindrical Shells Method:

(Not trivial).

2. **Find the volume of the solid enclosed by the graph of** $y = \sin x$ and $y = \cos x$, from $x = \frac{\pi}{4}$, to $x = \frac{3\pi}{4}$ and is revolved about the axis $x = -\pi$.

By Cylindrical Shells Method:

$$V = \int_{\frac{\pi}{4}}^{\frac{3\pi}{4}} 2\pi\,(x-(-\pi))(\sin x - \cos x)\,dx$$

$$= \int_{\frac{\pi}{4}}^{\frac{3\pi}{4}} 2\pi\,(x+\pi)(\sin x - \cos x)\,dx.$$