Quiz 3

Individual Part: 7 points

1. Set up the integral, do not solve, for the volume of the solid S. The base of S is the triangular region with vertices $(0,0)$, $(1,0)$ and (0,1). Cross-sections **parallel** to the $y-$axis are semicircles.

$$\int_0^1 \frac{\pi}{2}(\frac{1-x}{2})^2 dx.$$

2. The region R is bounded by the curves $y=\sqrt{x}$, $x=1$. Set up the integral, do not solve, for the volume of the solid generated by rotating region R around $x=2$.

$\int_0^1 2\pi(2-x)\sqrt{x}dx$ or $\int_0^1 \pi((2-y^2)^2-1)dy$.

3. Write out the expression to calculate the arclength of the curve given by $y=2x^2$, $0\le x\le 1$. You are not required to get the exact value.

$\int_0^1 \sqrt{1+(4t)^2}dt$.

Group Part: 3 points

Write out a parametric equation for the circle, which is centered at $(-1,1)$ with radius 2 and clockwise with starting point $(-1,3)$.

$$x=-1+2\cos(t),\ y=1-2\sin(t),\ -\frac{\pi}{2}\le t\le\frac{3\pi}{2}$$

or

$$x=-1+2\cos(t-\frac{\pi}{2}),\ y=1-2\sin(t-\frac{\pi}{2}),\ 0\le t\le 2\pi.$$