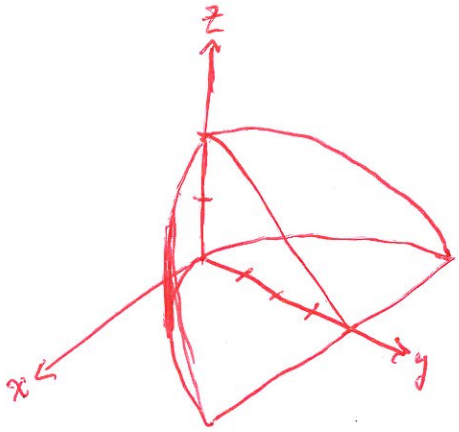
Math 251
Quiz 8 November 2, 2016

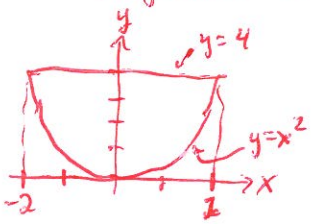
Name:

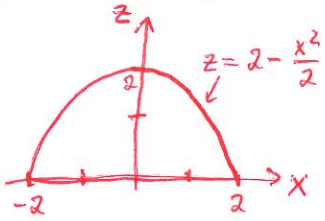
By handing in this quiz you assert that you understand and have followed IIT's guidelines for academic integrity.

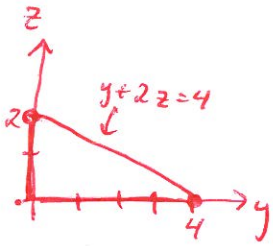
(1) Express the integral $\iiint_E f\, dV$ in each of the six orders of integration, where E is the solid bounded by $y = x^2$, $z = 0$, and $y + 2z = 4$.



Projections (for sticks method):

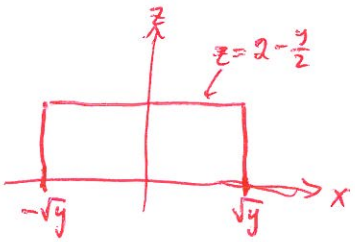




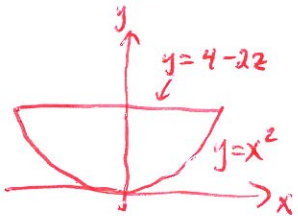


Slices

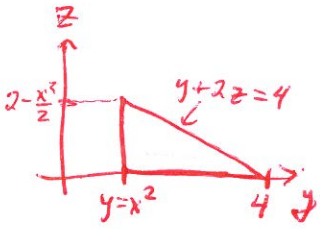
y fixed



z fixed



x fixed



$\int_{-2}^{2}\int_{x^2}^{4}\int_{0}^{2-\frac{y}{2}} f\, dz\, dy\, dx$

$\int_{0}^{4}\int_{-\sqrt{y}}^{\sqrt{y}}\int_{0}^{2-\frac{y}{2}} f\, dz\, dx\, dy$

$\int_{-2}^{2}\int_{0}^{2-\frac{x^2}{2}}\int_{x^2}^{4-2z} f\, dy\, dz\, dx$

$\int_{0}^{2}\int_{-\sqrt{4-2z}}^{\sqrt{4-2z}}\int_{x^2}^{4-2z} f\, dy\, dx\, dz$

$\int_{0}^{4}\int_{0}^{2-\frac{y}{2}}\int_{-\sqrt{y}}^{\sqrt{y}} f\, dx\, dz\, dy$

$\int_{0}^{2}\int_{0}^{4-2z}\int_{-\sqrt{y}}^{\sqrt{y}} f\, dx\, dy\, dz$