Name_____ ID_____

1-3	/15
4	/10
Total	/25

5 points each

1. Compute $\displaystyle\int_0^1\int_0^{z^2}\int_0^{xz} 30yz\,dy\,dx\,dz$.

   a. 15

   b. $\dfrac{1}{4}$

   c. $\dfrac{2}{3}$

   d. $\dfrac{5}{3}$

   e. $\dfrac{1}{2}$

2. Find the volume of the solid below $z = 2xy$ above the region in the xy-plane between $y = 3x$ and $y = x^2$.

   a. $\dfrac{729}{2}$

   b. $\dfrac{243}{4}$

   c. $\dfrac{81}{8}$

   d. $\dfrac{243}{2}$

   e. $\dfrac{81}{4}$
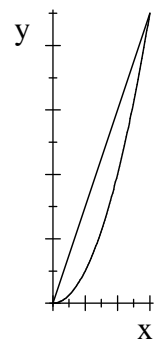
3. Reverse the order of integration in the integral $\int_0^2 \int_0^{y^2} \sqrt{x^4 + y^3} \, dx \, dy$

a. $\int_0^2 \int_0^{x^2} \sqrt{y^4 + x^3} \, dy \, dx$

b. $\int_0^2 \int_0^{x^2} \sqrt{x^4 + y^3} \, dy \, dx$

c. $\int_0^4 \int_{\sqrt{x}}^2 \sqrt{x^4 + y^3} \, dy \, dx$

d. $\int_0^4 \int_0^{\sqrt{x}} \sqrt{x^4 + y^3} \, dy \, dx$

e. $\int_0^{y^2} \int_0^2 \sqrt{x^4 + y^3} \, dy \, dx$

4. (10 points) Find the mass and center of mass of the region between $y = 0$, $y = x^2$ and $x = 1$, if the area density is $\rho = xy$.