Name_____ ID_____

1-2	/20
3	/10
Total	/30

Multiple Choice: (10 points each)

1. Find the area enclosed by **ONE** loop of the daisy $r = \sin 2\theta$:

    a. $\dfrac{\pi}{8}$

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

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

    d. π

    e. 2π

2. Compute $\iiint\limits_{D} \sqrt{x^2 + y^2}\ dV$ over the region D bounded by the paraboloid $z = 9 - x^2 - y^2$ and

  the xy-plane.

    a. $2\pi 3^4$

    b. $\dfrac{\pi}{2} 3^4$

    c. $\dfrac{\pi}{2} 3^5$

    d. $\dfrac{4\pi}{5} 3^4$

    e. $2\pi 3^5$

1

3. (10 points) Find the mass M and center of mass $(\bar{x}, \bar{y})$
of the region above the parabola $y = x^2$
below the line $y = 9$, if the density is $\rho = y$.
(5 points for setup.)
HINT: By symmetry, $\bar{x} = 0$. So you only need to compute $\bar{y}$.