Answers to Test 3, 1999

1. (a) $1/2$
   (b) π^2
   (c) $4\sin(1)/3$

2. (a) $\displaystyle\int_0^1 \int_y^1 f(x,y)\,dx\,dy$
   (b) $\displaystyle\int_0^1 \int_0^{y^{1/3}} f(x,y)\,dx\,dy$

3. (a) 16
   (b) 8

4. $(r,\theta,z) = (2,\pi/4,2)$
   $(\rho,\theta,\phi) = (2\sqrt{2},\pi/4,\pi/4)$

5. $\displaystyle\int_0^3 \int_0^2 \int_0^{\sqrt{4-y^2}} dz\,dy\,dx$

6. $\displaystyle\int_0^{2\pi} \int_0^{\sqrt{2}} \int_{r^2}^{\sqrt{6-r^2}} r\,dz\,dr\,d\theta$

7. $\pi/3$