Homework 10

1. sketch the region R and evaluate the iterated integral

   $\int_R \int f(x,y)\,dA$.

(a) $\int_0^6 \int_{\frac{y}{2}}^3 (x+y)\,dx\,dy$

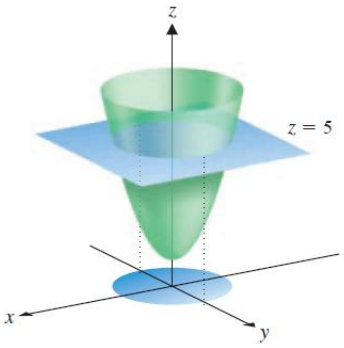
(b) $\int_0^4 \int_0^x (4e^{x^2} - 5\sin y)\,dy\,dx$

2. evaluate the double integral $\int_R \int f(r,\theta)\,dA$ and sketch the region R.

(a) $\int_0^{2\pi} \int_0^{2-2\sin\theta} r\,dr\,d\theta$

(b) $\int_0^{2\pi} \int_2^3 (9-r^2)r\;dr\,d\theta$

3. Find the surface area of that portion of the paraboloid $z = 1 + x^2 + y^2$ that lies below the plane z = 5.



Intersection of the paraboloid with the plane $z = 5$