Quiz 1/ double integral

Q1/ Revers the order of the following integration:

$$\int_{0}^{4}\int_{\frac{y^2-6}{2}}^{y+1} f(x,y)\,dx\,dy$$

Q2/ Evaluate the area bounded by three curves:

$x^2+y^2=1$, $(x-1)^2+y^2=1$ and $y=-x$

Q3/ Find the area of the region which lies inside the circle $x^2+(y-1)^2 = 1$ but outside the circle $x^2+y^2 = 1$.

Q4/ Evaluate the integral:

$$\int_{0}^{3}\int_{1}^{\sqrt{4-y}} (x+y)\,dx\,dy$$

By changing the order of the integration.

Q5/ Revers the order of the following integration:

$$\int_{0}^{\frac{\pi}{2}}\int_{x}^{sin(x)} f(x,y)\,dy\,dx$$

Q6/ Evaluate the integral:

$$\int_{0}^{2}\int_{0}^{\sqrt{2x-x^2}} \sqrt{x^2+y^2}\,dy\,dx$$

By converting to polar coordinates.