Math 001D Assignment 15.10 Ans_____

Instructions: Write complete legible solutions to the following problems in the space provided. Be sure to supply all the necessary steps that lead to your answers

1. Find the Jacobian of the transformation Ans_____

$$x = uv,\ y = \frac{u}{v}$$

2. Find the Jacobian of the transformation Ans_____

$$x = v + w^2,\ y = w + u^2,\ z = u + v^2$$

3. Find the image of the set under the given transformation. Ans_____

S is the square bounded by $u = 0,\ u = 1,\ v = 0,\ v = 1$

$$x = v,\ y = \frac{u}{1 + v^2}$$

4. A region in the -plane is given. Find equations for a transformation that maps a rectangular region in the -plane onto , where the sides of are parallel to the - and - axes.
R is a parallelogram wit vertices $(0,0),\ (4,3),\ (2,4),\ (-2,1)$.

Ans_____

5. Use the given transformation to evaluate the integral

Ans_____

$\iint_R (4x+8y)\,dA$,where R is a parallelogram with vertices

$(-1,3),\ (1,-3),\ (3,-1),\ (1,5)$ $\quad x=\frac{1}{4}(u+v),\ y=\frac{1}{4}(v-3u)$