## HOMEWORK 3

Que: (45 p) Assume that $x, y \in R$ and $z=x+i y \in C$ and answer the followings:
1-) Find the linear transform which converts $\operatorname{Re}\{z\} \geq 2$ area to inside the unit circle with center $(0,1)$.

2-) Find the linear transform which converts inside the circle has a radius 4 and center is (-4,0) to $\operatorname{Im}\{z\} \geq-1$.

Que: (45 p) Assume that $x, y \in R$ and $z=x+i y \in C$ and answer the followings:
1-) Find the image of $\operatorname{Re}\{z\} \geq 8$, under the transform of $w=\frac{z}{2 i z+2}$
2-) Find the image of the area between $|z+4 i| \leq 4$ and $|z+i| \geq 1$. Under the transform of $w=\frac{i}{z}$ Que: (10 p) Assume that $x, y \in R$ and $z=x+i y \in C$ and answer the followings:

1-) Find the image of $a \leq x \leq b$ and $c \leq y \leq d$ rectangle region under the transform of $w=e^{z}$.

