ii) $u = x^2 + 4xy + y^2$ 16

$v = y^2 - x^2$

$\frac{\partial u}{\partial x} = 2x + 4y, \quad \frac{\partial v}{\partial y} = -2x$

$2x + 4y = -2x \Rightarrow x = -y.$

$\frac{\partial u}{\partial y} = -\frac{\partial v}{\partial x}$

$4x + 2y = -2y \Rightarrow x = -y$

Differentiabe at every point $z = k - ik$

c) $f(z) = \frac{z+2i}{z-2i} = 1 + \frac{4i}{z-2i}$

$f'(z) = \frac{-4i}{(z-2i)^2} \neq 0$ anywhere

$\therefore$ conformal.