

Panel 10

Homework:

- ① Express $f(z) = e^z$ in the form $u(x,y) + iv(x,y)$
- ② Show that the image of $x(t) = t, y(t) = 2t + t$ under e^z is a spiral!
- ③ Find the following:
 - a) $\log(-1)$
 - b) $\log(4i)$
 - c) $\log(i\sqrt{2} - \sqrt{2})$
- ④ Show that $f(z) = \ln(x^2 + y^2)$ is harmonic
- ⑤ Recall the definition of $\log(z)$ versus $\text{Log}(z)$. Then show that $\text{Log}(zw) = \text{Log}(z) + \text{Log}(w)$ is not always true.