Worksheet Week IV

(a) Write 2^i in rectangular form.

(b) Show that $\sinh(z + \pi i) = -\sinh(z)$ and $\tanh(z + \pi i) = \tanh(z)$.

(c) For the function

$$f(z) = \begin{cases} 1 & \text{when } y < 0, \\ 4y & \text{when } y > 0 \end{cases}$$

evaluate

$$\int_C f(z)dz,$$

where C is the arc from $z = -1 - i$ to $z = 1 + i$ along the curve $y = x^3$.