Panel 1

Complex Homework #11

(1) Find the real and imaginary (principle) parts of:

a) π^i b) i^π

(2) Find the magnitude (abs. value) as a decimal # for:

a) $\cos(3i)$ b) $\sin(3i)$

What is interesting about your answers?

(3) Suppose $z(t) = (5+i)t + 7t$ and $w(t) = 3i e^{2it}$. Find

a) $z'(t)$ b) $w'(t)$ c) $\int_0^1 z(t)\,dt$ d) $\int_0^{\pi} w(t)\,dt$

1

Panel 2

(4) Find an example of a function $z(t) = x(t) + iy(t)$ for which

a) the Mean Value Theorem for differentiation does not hold

b) the Mean Value Theorem for integration does not hold

Hint: try $z(t) = e^{it}$ with $t \in [-\pi, \pi]$

2