

Panel 1

Complex Analysis

HW 1

① Compute the following values:  
a)  $(3-2i) \cdot (2+4i)$     b)  $\operatorname{Re} \left( \frac{3-i}{1+4i} \right)$     c)  $\operatorname{Im} (i^{3+i})$

② Prove the distributive law  $z_1 \cdot (z_2 + z_3) = z_1 z_2 + z_1 z_3$  holds for all complex numbers  $z_1, z_2, z_3$

③ Show that  $1+i$  solves  $z^2 - 2z + 2 = 0$ . Find a second solution.

④ Solve  $(3+2i)z = 1+i$  for  $z = x+iy$

⑤ What is the square root of  $z = 3+4i$ ?