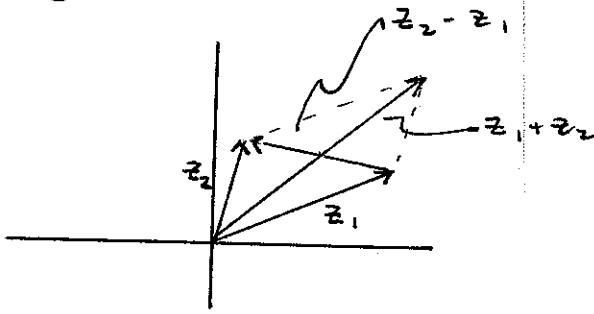


3)



$$|z_1 + z_2|^2 + |z_2 - z_1|^2 = 2|z_1|^2 + 2|z_2|^2$$

$$(z_1 + z_2)(\bar{z}_1 + \bar{z}_2) + (z_2 - z_1)(\bar{z}_2 - \bar{z}_1) = \dots$$

etc.

5) a)  $\left| \frac{1+2i}{-2-i} \right| = \left| \frac{(1+2i)(-2+i)}{4+1} \right| = \left| \frac{1}{5}(-4-3i) \right|$   
 $= \frac{1}{5}(4^2 + 3^2)^{1/2} = 1$

12) a)  $\arctan(1) = -3\pi/4$

b)  $\arctan(0) = +\pi$

c)  $\arctan(\infty) = \pi/2$

d)  $\arctan(-\frac{1}{\sqrt{3}}) = -\pi/6$