CB pg. 5: 1d)

$$\frac{1+2i}{3-4i}+\frac{2-i}{5i}=-\frac{2}{5}$$

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

$$=\frac{3+10i-8}{9+16}+\frac{10i+5}{-25}$$

$$=\frac{-5+10i-(10i+5)}{25}$$

$$=\frac{-5+10i-10i-5}{25}$$

$$=\frac{-10}{25}$$

$$=-\frac{2}{5}$$

$$\overline{\bar{z} + 3i} = \bar{\bar{z}} + \overline{3i}$$

$$= z + \overline{3i}$$

$$= z - 3i$$

$$\overline{z_1 \pm z_2} = \bar{z}_1 \pm \bar{z}_2$$

$$\bar{\bar{z}} = z$$

$$\bar{z} = -z$$

if z is imaginary

$$\overline{iz} = -i\bar{z}$$

$$\overline{iz} = \bar{i}\,\bar{z}$$

$$= -i\bar{z}$$

$$\overline{z_1 z_2} = \bar{z}_1 \bar{z}_2$$

$$\bar{i} = -i$$

$$\left|(2\bar{z}+5)(\sqrt{2}-i)\right| = \left|(2\bar{z}+5)\right|\left|(\sqrt{2}-i)\right| \qquad |z_1 z_2| = |z_1||z_2|$$

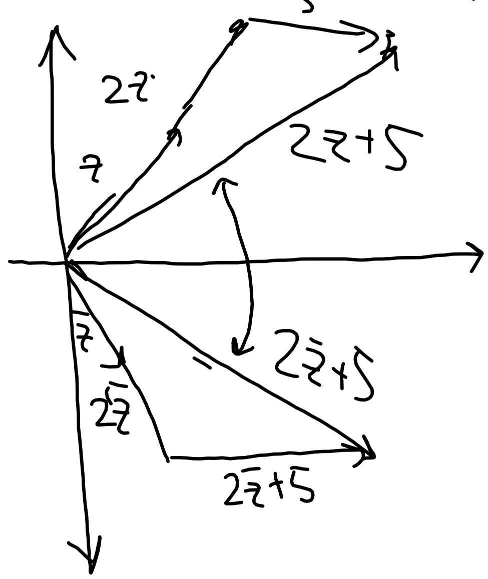
$$= \left|(2\bar{z}+5)\right|\left(\sqrt{\sqrt{2}^2+(-1)^2}\right)$$

$$= \left|(2\bar{z}+5)\right|\left(\sqrt{2+1}\right)$$

Can skip to here

$$= \left|(2\bar{z}+5)\right|\left(\sqrt{3}\right)$$

or $= \sqrt{3}\,|2\bar{z}+5|$



$$= \sqrt{3}\left|(2z+5)\right|$$

$$\left|(2\bar{z}+5)(\sqrt{2}-i)\right| = \left|(2\bar{z}+5)\right|\left|\sqrt{2}-i\right|$$

$$= \sqrt{3}\,\left|2\bar{z}+5\right|$$

$$= \sqrt{3}\,\left|\overline{2\bar{z}+5}\right| \qquad |\bar{z}| = |z|$$

$$= \sqrt{3}\,\left|\overline{2\bar{z}}+\bar{5}\right| \qquad \overline{z_1 \pm z_2} = \bar{z}_1 \pm \bar{z}_2$$

$$= \sqrt{3}\,\left|\bar{2}\bar{\bar{z}}+\bar{5}\right| \qquad \overline{z_1 z_2} = \bar{z}_1 \bar{z}_2$$

$$= \sqrt{3}\,\left|2\bar{\bar{z}}+5\right| \qquad \bar{z} = z \text{ when } z \in \mathbb{R}$$

$$= \sqrt{3}\,\left|2z+5\right| \qquad \bar{\bar{z}} = z$$

z_1, z_2

Addition: $(2+3i)+(7-i)=9+2i$

$$7e^{\frac{2\pi}{3}i}+\sqrt{4}\,e^{-\frac{\pi}{4}i}=?$$

Multiplication: $7e^{\frac{2\pi}{3}i}\cdot\sqrt{4}\,e^{-\frac{\pi}{4}i}=7\sqrt{4}\,e^{\frac{2\pi}{3}i}e^{-\frac{\pi}{4}i}$

$$=7\sqrt{4}\,e^{\left(\frac{2\pi}{3}-\frac{\pi}{4}\right)i}$$

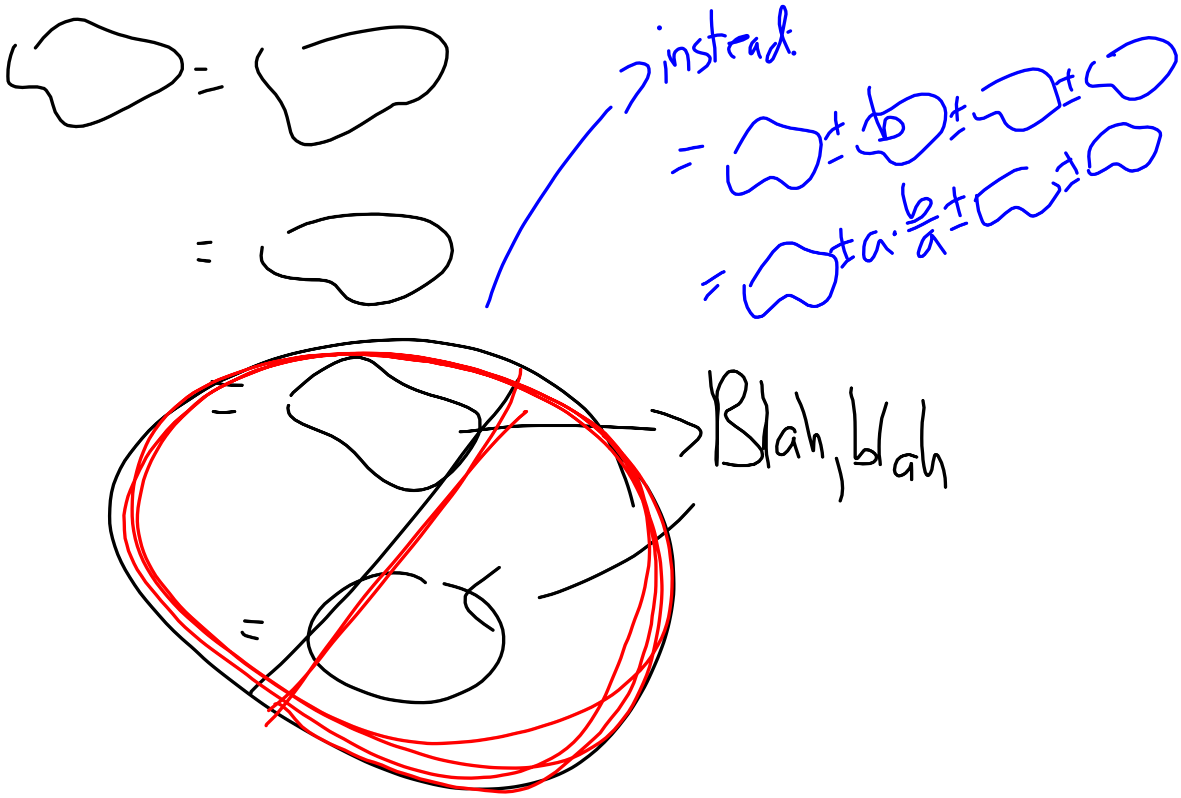
$$\frac{ae^{bi}}{ce^{di}}=\frac{a}{c}e^{(b-d)i}$$

$\sin(A+B)$

$e^{i\theta} = \cos\theta + i\sin\theta$

<u>Given</u> $x + iy = a + ib$

$\Longrightarrow x = a, \ y = b$


instead:
Blah, blah

Due Fri @ 3:00

EF: 10, 11

And show that

$$(\bar{z}-3)(z+3)-2i = |z|^2+6i\,\mathrm{Im}\,z-9+2i$$