

$$8) \left| \frac{z_1}{z_2} \right|$$

$$= \frac{-10}{-13} + \frac{35}{13}$$

$$\left| \frac{z_1}{z_2} \right| = \sqrt{\frac{(-10)^2 + 35^2}{13^2}}$$

$$\sqrt{9,60}$$

$$\left| \frac{z_1}{z_2} \right| = 3,09$$

$$= \sqrt{9,46 + 0,14}$$

$$9) \frac{z_1}{z_2}$$

$$\frac{10 - j5}{-3 + j2} \cdot \frac{-3 - j2}{-3 - j2} = \frac{-30 - j20 + j15 + j10^2}{-3^2 - (j2)^2}$$

$$\frac{-40 - j5}{9 + 4}$$

$$\frac{-40 - j5}{13}$$

$$= \frac{-10}{13} - \frac{j5}{13}$$

$$\frac{-30 - j20 + j15 + j10^2}{-3^2 - (j2)^2}$$

$$10) \frac{z_2}{z_1}$$

$$\frac{-3 + j2}{1,8 + j0,68}$$

$$\frac{1,8 - j0,68}{1,8 - j0,68}$$

$$= \frac{-5,4 + j3,6 + j2,04 - j1,36^2}{1,8^2 + j0,68^2}$$

$$= \frac{j5,64 - 1,01}{3,24 - 0,4624}$$

$$\frac{j5,64 - 1,01}{2,7776}$$

$$11) \varphi \bar{z}_1 + \bar{z}_2$$

$$\alpha = \tan^{-1} \left( \frac{-3}{1} \right)$$

$$\alpha = -23,1$$

$$180 - (-23,1) = 203,1^\circ$$

$$12) \varphi \bar{z}_3 \cdot \bar{z}_4$$

$$\alpha = \tan^{-1} \left( \frac{8,75}{5,66} \right)$$

$$\alpha = 57,10$$

$$180 - 57,10 = 122,89$$

$$13) \varphi \frac{\bar{z}_3}{\bar{z}_2}$$

$$5 \cdot e^{j\frac{\pi}{4}}$$

$$14) \varphi \bar{z}_1 \cdot \bar{z}_2$$

$$-20 + j35$$

$$\alpha = \tan^{-1} \left( \frac{35}{-20} \right)$$

$$\alpha = -60,25$$

$$15) \varphi \bar{z}_3 \bar{z}_4$$

$$2,51 + j23,88$$

$$\alpha = \tan^{-1} \left( \frac{23,88}{2,51} \right)$$

$$\alpha = 83,92$$