

1a) Multiply the following complex numbers using the FOIL method:

$$(\sqrt{2} + i\sqrt{2})(-3\sqrt{2} + 3i\sqrt{2}) =$$

1b) Convert your product above to polar form.

1c) Convert each of the original complex numbers to polar form.

1d) Compare the complex numbers to their product in polar form. Do you notice anything?

Multiplying Two Complex Numbers in Polar Form

1. Multiply their r values
2. Add their angles

$$z_1 = r_1 \operatorname{cis} \theta_1$$

$$z_2 = r_2 \operatorname{cis} \theta_2$$

$$z_1 \cdot z_2 = r_1 \operatorname{cis} \theta_1 \cdot r_2 \operatorname{cis} \theta_2 = r_1 r_2 \operatorname{cis} (\theta_1 + \theta_2)$$

2. Express the following product in both polar and rectangular forms.

$$(3 \operatorname{cis} 165^\circ)(4 \operatorname{cis} 45^\circ)$$