

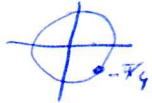
①. $e^{i\pi} = e^{i0} = 1$ $e^{i3\pi} = e^{i\pi} = -1$ $e^{i\pi} = e^{-i\pi} = -1$

• $2e^{i\pi/3} \times 3e^{i\pi/6} = 6e^{i(\pi/3 + \pi/6)} = 6e^{i(\frac{2\pi}{6} + \frac{\pi}{6})} = 6e^{i\frac{3\pi}{6}} = 6e^{i\pi/2}$

• $2e^{i2\pi/3} \times 5e^{i\pi} = 10e^{i(\frac{4\pi}{3} + \pi)} = 10e^{i\frac{5\pi}{3}} = 10e^{i(\frac{5\pi}{3} - 2\pi)} = 10e^{i(-\frac{\pi}{3})} = 10e^{-i\pi/3}$

②. $|3-3i| = \sqrt{3^2+3^2} = \sqrt{2 \cdot 3^2} = 3\sqrt{2}$

$3-3i = 3\sqrt{2} \left(\frac{1}{\sqrt{2}} - \frac{1}{\sqrt{2}}i \right) = 3\sqrt{2} \left(\frac{\sqrt{2}}{2} - i\frac{\sqrt{2}}{2} \right) = 3\sqrt{2}e^{-i\pi/4}$




(modulus $3\sqrt{2}$)
(argument $-\frac{\pi}{4}$)

• $-2e^{i\pi/2} = 2e^{-i\pi} e^{i\pi/2} = 2e^{i(-\pi + \pi/2)} = 2e^{-i\pi/2}$

(modulus 2)
(argument $-\pi/2$)

• $|\sqrt{3}+i| = \sqrt{3+1} = \sqrt{4} = 2$



(modulus 2)
(argument $5\pi/6$)

$-\sqrt{3}+i = 2 \left(-\frac{\sqrt{3}}{2} + i\frac{1}{2} \right) = 2e^{i5\pi/6}$

• $-2e^{2i\pi/3} = 2e^{-i\pi} e^{i2\pi/3} = 2e^{i(\frac{2\pi}{3} - \pi)} = 2e^{-i\pi/3}$

(modulus 2)
(argument $-\frac{\pi}{3}$)

③. $-2e^{i\pi/2} \times 2e^{i3\pi/2} = 4e^{i(\pi/2 + 3\pi/2)} = 4e^{i3\pi} = 4e^{i\pi}$

⑤. $2e^{i3\pi/2} = 2 \times (-i) = -2i$

• $e^{2-i\pi/3} = e^2 e^{-i\pi/3} = e^2 \left(\frac{1}{2} - i\frac{\sqrt{3}}{2} \right) = \frac{e^2}{2} - i\frac{\sqrt{3}e^2}{2}$