

Solution

$$i \equiv \sqrt{-1}$$

1. What is $(-i)i$?

a. $-i$

b. -1

c. $+1$

$$(-i)i = -i^2 = -(-1) = +1$$

2. What is $1/i$?

a. -1

b. $-i$

c. $+i$

$$\frac{1}{i} = \left(\frac{1}{i}\right)\left(\frac{i}{i}\right) = \frac{i}{-1} = -i$$

3. What is $|e^{i\phi}|^2$?

a. 0

b. $e^{2i\phi}$

c. 1

$$\begin{aligned} |e^{i\phi}|^2 &\equiv (e^{i\phi})^* (e^{i\phi}) = (e^{-i\phi})(e^{i\phi}) \\ &= e^{-i\phi+i\phi} = e^0 = 1 \end{aligned}$$

This is the definition
of the magnitude of
a complex number.