

Question 1

Let

$$z = e^{i0}$$

Which of the following best represents z ?

1. i
2. 1
3. -1
4. $-i$
5. $1 + i$

Question 2

Let

$$z = e^{i\frac{\pi}{2}}$$

Which of the following best represents z ?

1. i
2. 1
3. -1
4. $-i$
5. $1 + i$

Question 3

Let

$$z = e^{i\pi}$$

Which of the following best represents z ?

1. i
2. 1
3. -1
4. $-i$
5. $1 + i$

Question 4

Let

$$z = e^{i2\pi}$$

Which of the following best represents z ?

1. i
2. 1
3. -1
4. $-i$
5. $1 + i$

Question 5

Let

$$z = e^{i\frac{\pi}{4}}$$

Which of the following best represents z ?

1. $-\frac{1}{\sqrt{2}} - i\frac{1}{\sqrt{2}}$
2. $\frac{1}{\sqrt{2}} - i\frac{1}{\sqrt{2}}$
3. $-\frac{1}{\sqrt{2}} + i\frac{1}{\sqrt{2}}$
4. $\frac{1}{\sqrt{2}} + i\frac{1}{\sqrt{2}}$

Question 6

A wave traveling along the x axis is described by the complex exponential

$$\psi(x, t) = Ae^{i(kx - \omega t)}$$

where A is real.

Which of the following is true?

1. $|\psi(x, t)|^2 = A$
2. $|\psi(x, t)|^2 = A^2$
3. $|\psi(x, t)|^2 = A^2 e^{i2(kx - \omega t)}$
4. $|\psi(x, t)|^2 = A \cos(kx - \omega t)$
5. $|\psi(x, t)|^2 = A^2 \cos^2(kx - \omega t)$