

# Introduction to complex numbers

## Quiz

### Question 1

How is the imaginary unit  $i$  defined?

- A.  $i^2 = 1$
- B.  $i^2 = 0$
- C.  $i^2 = -1$

### Question 2

Consider  $\alpha = 1 + 2i$  and  $\beta = 3 - 4i$ . What is  $\alpha + \beta$ ?

- A.  $4 - 2i$
- B.  $4 + 2i$
- C.  $1 - 2i$

### Question 3

What is the result of the product  $(1 + 2i)(3 - 4i)$ ?

- A.  $11 + 2i$
- B.  $7 + 4i$
- C.  $3 - 8i$

### Question 4

If  $z = 1 + 2i$ , which of the following is  $|z|$ ?

- A.  $\sqrt{3}$
- B.  $\sqrt{5}$
- C.  $\sqrt{6}$

### Question 5

In quantum physics, if a system is represented by  $|\psi\rangle = \alpha |0\rangle + \beta |1\rangle$ , the probability of measuring it to be in the state  $|0\rangle$  is:

- A.  $|\alpha|^2$
- B.  $\alpha + \beta$
- C.  $\alpha^2$