Mathematics Pre-arrival course

Test Your Understanding Quiz 1 – Language of Mathematics and Real Functions

We find that sometimes the typesetting for mathematics on blackboard does not work very well. The first thing to try is to change/update browser, as that sometimes solves the issue completely!

Test your understanding quiz 1

1. Find all solutions to $z^2 + 4z + 13 = 0$.

2. Give a sketch proof that $2 + 7i$ does not equal $3 - 4i$.

You may assume all standard results for real number, and that for real numbers $a, b, c, d : (a + bi) + (c + di) = (a + b) + (b + d)i$, and that $i^2 = -1$.

Test your understanding quiz 2

Let $z = 2 - i$. Match the results below (1-4) to the following quantities:

a) z^* (its complex conjugate)

b) zz^*

c) $\frac{z}{z^*}$

d) $z^2 + z^* + 3i$

Results displayed:

1. 5

2. $\frac{3}{5} - \frac{4i}{5}$

3. 5

4. $2 + i$

Test your understanding quiz 3

1. Is the loci described by $|z + (3 + i)| = |z|$ a:

   (a) Circle.
   (b) Line.
   (c) Ray.
   (d) Plane.

2. The triangle formed by the three half-lines:

$$\arg(z + (2 - i)) = 1/2$$
$$\arg(z + (2 - i)) = 2$$
$$\arg(z - (4 + i)) = \theta$$

   is isosceles. What are the possibilities for θ in radians to 3 significant figures?

(a) $\theta = 1.24$ or 2.28

(b) $\theta = 2.14$

(c) $\theta = 2.14$ or 2.82

(d) $\theta = 2.43$ or 2.48

(e) $\theta = 2.24$