Complex Numbers Test 1A

Name   **Answers**

7   8   9   10   **11**   12

Navigator   Assessment   Student   25 min

Question: 1

Given $z_1 = 3 + 2i$ and $z_2 = 4 - 5i$ then $z_1 + z_2$ is equal to:

a) $4i$ b) 4 c) 22 d) $7 + 7i$ **e) $7 - 3i$**

Question: 2

Given $(x + 4) + (3 + y)i = 5 + 2i$ then:

a) $x = 1$ and $y = -1$ b) $x = 1$ and $y = 1$ c) $x = 1$ and $y = -i$ d) $x = 1$ and $y = i$ e) $x = 2$ and $y = -2$

Question: 3

Given $z_1 = 3 + 4i$ and $z_2 = 4 - 5i$ then $z_1 z_2$ is equal to:

a) $12 - 20i$ b) 32 **c) $32 + i$**   d) $32 - i$ e) $4 + 5i$

Question: 4

Given $z_1 = 6 + 8i$ and $z_2 = 3 - 4i$ then $\dfrac{z_1}{z_2}$ is equal to:

a) $\dfrac{1}{25}(-14 + 48i)$ b) $-14 + 48i$

c) $2 - 2i$ d) $2 + 2i$

e) -2

Question: 5

Which one of the following complex numbers has the greatest magnitude?

a) $3 + 4i$ b) $3 - 4i$ c) $4 + 3i$ **d) $5 + i$**   e) $6i$

Question: 6

Given $z_1 = 3 + 4i$ and $z_2 = 6 + bi$ where $b \in R$, if $\text{Im}(z_1 z_2) = 0$ then b is equal to:

a) -4 b) $4i$ c) 8 **d) -8**   e) -2

Question: 7

Given $z_1 = 5 - 12i$ and $z_2 = 7 + 24i$ which one of the following statements is true?

a) $|z_1| > |z_2|$ b) $\overline{z_1} = -z_1$

c) $|\overline{z_1}| > |\overline{z_2}|$ d) $|z_2| > z_2 \overline{z_2}$

e) $\dfrac{1}{z_2} = \dfrac{\overline{z_2}}{|z_2|^2}$

Question: 8

If $\sqrt{9+40i} = a+bi$ where a and b are non-zero real numbers, the respective values of a and b are:

a)   5 and 4   b)   4 and 5   c)   3 and $2\sqrt{10}$ d)   5 and -4   e)   4 and -5

Question: 9

If $p(z) = z^2 - 14z + 50$ and $p(z) = 0$ then z =

a) $z = \pm 7i$

b) $z = -7 \pm i$

c) $z = 7 \pm i$

d) $z = 6$ or $z = 8$

e)   No solutions (Since $\Delta < 0$)

Question: 10

The solutions to $2z^2 + 8 = 0$ are:

a) $z = -2$

b) $z = \pm 2i$

c) $z = 4$

d) $z = \pm 4i$

e)   None of the above

TEXAS INSTRUMENTS