Complex Numbers Test 1A

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Name _____

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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 $\frac{z_1}{z_2}$ is equal to:

a) $\frac{1}{25}(-14+48i)$ 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) $\frac{1}{z_2} = \frac{\overline{z}_2}{|z_2|^2}$

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