

If $a + bi = (1 + 2i)(3 - 4i)$, where a and b are constants and $i = \sqrt{-1}$, what is the value of $a + b$?

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If $a + bi = \frac{4 + i}{2 - i}$, where a and b are constants and $i = \sqrt{-1}$, what is the value of a ?

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For what value of b does $(b + i)^2 = 80 + 18i$?

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The solutions of the equation $x^2 - 2x + 15 = 0$ are $x = a + i\sqrt{b}$ and $x = a - i\sqrt{b}$, where a and b are positive numbers. What is the value of $a + b$?

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Given that $i = \sqrt{-1}$, which of the following is equal

to $\frac{1}{(1+i)^2}$?

- A) $\frac{1}{2} - \frac{1}{2}i$
- B) $-\frac{1}{2}i$
- C) $\frac{1}{2}i$
- D) $\frac{1}{2} + \frac{1}{2}i$

Which of the following expressions is equal to $(2 + 2i)^2$?

- A) 0
- B) $4i$
- C) $8i$
- D) $4 - 4i$

If $B(3 + i) = 3 - i$, what is the value of B ?

- A) $\frac{3}{5} + \frac{4}{5}i$
- B) $\frac{4}{5} + \frac{3}{5}i$
- C) $\frac{3}{5} - \frac{4}{5}i$
- D) $\frac{4}{5} - \frac{3}{5}i$

$$x^2 + kx = -6$$

If one of the solutions to the equation above is $x = 1 - i\sqrt{5}$, what is the value of k ?

- A) -4
- B) -2
- C) 2
- D) 4

If $i^m = -i$, which of the following CANNOT be the value of m ?

- A) 15
- B) 18
- C) 19
- D) 27