

Imaginary & Complex Numbers Practice Questions

DO NOT USE A CALCULATOR ON ANY OF THE FOLLOWING QUESTIONS.

1. For $i = \sqrt{-1}$, what is the sum of $(-4 + 7i) + (-3 - 2i)$?

- (A) $-7 - 5i$
- (B) $-7 + 5i$
- (C) $-1 - 9i$
- (D) $7 + 9i$

2. What is the sum of the complex numbers $4 + 3i$ and $5 + 6i$, where $i = \sqrt{-1}$?

- (A) 20
- (B) $20i$
- (C) $9 + 9i$
- (D) $20 + 18i$

3. Which of the following complex numbers is equal to $(2 + 11i) - (3i^2 + 7)$, for $i = \sqrt{-1}$?

- (A) $-8 + 11i$
- (B) $-5 + 8i$
- (C) $-2 + 11i$
- (D) $12 + 11i$

4. Which of the following complex numbers is equal to $(12 - 4i^2) - (14 - 8i^2 + 2i)$, for $i = \sqrt{-1}$?

- (A) $10 - 2i$
- (B) $2 + 2i$
- (C) $-6 + 2i$
- (D) $-6 - 2i$

5. Which of the following values is equivalent to $(-6 - 4i + i^2) - 2(4 - 3i^2 - 2i)$, for $i = \sqrt{-1}$?

- (A) -21
- (B) -9
- (C) $-14 - 2i$
- (D) $-21 - 8i$

6. Which of the following values is equivalent to $-3i^2(4i - i^2) - 2i^2(1 + 5i^2 + 6i)$, for $i = \sqrt{-1}$?

- (A) -11
- (B) $-5 + 24i$
- (C) $11 + 24i$
- (D) 11

$$\frac{4 - 2i}{1 + i}$$

7. If the expression above is rewritten in the form $a + bi$, where a and b are real numbers, what is the value of a ? (Note: $i = \sqrt{-1}$)

- (A) -4
- (B) -1
- (C) 1
- (D) 4

$$\frac{6 + 2i}{3 - 4i}$$

8. If the expression above is rewritten in the form $a + bi$, where a and b are real numbers, what is the value of b ? (Note: $i = \sqrt{-1}$)

- (A) $\frac{2}{5}$
- (B) $\frac{1}{2}$
- (C) $\frac{6}{5}$
- (D) 2

Conjugate Fractions Practice Questions

DO NOT USE A CALCULATOR ON THE FOLLOWING QUESTIONS.

$$\frac{1}{4x+2} + 4$$

1. Which of the following is equivalent to the expression above for $x \neq \frac{1}{2}$?

(A) $\frac{5}{4x+2}$

(B) $\frac{4x+9}{4x+2}$

(C) $\frac{16x+5}{4x+2}$

(D) $\frac{16x+9}{4x+2}$

$$\frac{6-\sqrt{6}}{3+\sqrt{6}}$$

2. FREE RESPONSE: If the equation above is rewritten in the form $a+b\sqrt{6}$, where a and b are constants, what is the value of $a+b$?

$$\frac{7x+9}{(x+1)^2} - \frac{7}{x+1}$$

3. FREE RESPONSE: The expression above is equivalent to $\frac{n}{(x+1)^2}$ where n is a positive constant and $x \neq -1$. What is the value of n ?

$$\frac{6+5\sqrt{2}}{6-2\sqrt{2}}$$

4. If the equation above is rewritten in the form $a+b\sqrt{2}$, where a and b are constants, what is the value of a ?

(A) 1

(B) $\frac{14}{11}$

(C) $\frac{7}{4}$

(D) 2

$$\frac{12x^2 + 20x - 39}{ax + 4} = -3x - 8 - \frac{7}{ax + 4}$$

$$\frac{5 + 20\sqrt{5}}{2 - \sqrt{5}}$$

5. The equation above is true for all values of

$x \neq -\frac{4}{a}$, where a is a constant. What is the value of a ?

- (A) -15
(B) -4
(C) 4
(D) 15

7. If the equation above is rewritten in the form $a + b\sqrt{5}$, where a and b are constants, what is the value of $a - b$?

- (A) -155
(B) -65
(C) 65
(D) 155

$$\frac{100 - 50i}{1 + 3i}$$

$$\frac{20i + 32}{2i - 2}$$

6. If the expression above is rewritten in the form $a + bi$, where a and b are real numbers, what is the value of b ? (Note: $i = \sqrt{-1}$)

- (A) -35
(B) 25
(C) 50
(D) 100

8. If the expression above is rewritten in the form $a + bi$, where a and b are real numbers, what is the value of a ? (Note: $i = \sqrt{-1}$)

- (A) -13
(B) -3
(C) 3
(D) 10