

Equality of Complex Numbers (ALG.CN.02)

Find real numbers a and b such that each equation is true.

1. $a + bi = 8 - 3i$ $a = 8, b = -3$

2. $2a + bi = -6 + i$ $a = -3, b = 1$

3. $(4a - 1) - 5bi = -9 + 15i$ $a = -2, b = -3$

4. $(5a + 3) + (2 - b)i = -12 - i$ $a = -3, b = 3$

5. $-11 + (6b)i = (3a - 2) - i\sqrt{6}$ $a = -3, b = \frac{-\sqrt{6}}{6}$

6. $(a - 2b) - (5a - b)i = 4 - 5i$ $a = \frac{2}{3}, b = -\frac{5}{3}$

Determine the complex number $a + bi$ represented by each system.

7. $\begin{cases} 2a + b = -1 \\ 4b = 1 - 7a \end{cases}$ $-5 + 9i$

8. $\begin{cases} \sqrt{3}a + 5b + 1 = 0 \\ 3a - 5b = \frac{5+3\sqrt{3}}{2} \end{cases}$ $\frac{\sqrt{3}}{2} - \frac{1}{2}i$