

## Algebra 2: Homework 56

- Write a quadratic equation with
  - $-4$  and  $\frac{2}{3}$  as its roots
  - $2 - i$  and  $2 + i$  as its roots
  - $4 - \sqrt{3}$  as one of its roots
- Write a quadratic equation that has a root of  $3 + 4i$ .
- If the equation  $x^2 - kx - 36 = 0$  has  $x = 12$  as one root, what is the value of  $k$ ?
- For the equation  $3x^2 + kx - 27 = 0$ , one root is 3. Find the other root and find  $k$ .
- If  $2 + 3i$  is one root of a quadratic equation with real coefficients, what is the sum of the roots of the equation?
- For which equation does the sum of the roots equal 3 and the product of the roots equal 4.5?
  - $x^2 + 3x - 9 = 0$
  - $x^2 - 3x - 9 = 0$
  - $2x^2 + 6x + 9 = 0$
  - $2x^2 - 6x + 9 = 0$
- For the solution set  $\left\{\frac{2}{5} \pm \frac{\sqrt{3}}{5}\right\}$ , write a quadratic equation with integer coefficients.
- In the equation  $ax^2 + bx + c = 0$ ,  $a$ ,  $b$ , and  $c$  are integers. If  $\frac{1}{3} - \frac{2}{3}i$  is a root of this equation, find the values of  $a$ ,  $b$ , and  $c$ .
- In the equation  $x^2 - 7x + 2 = 0$ , the sum of the roots exceeds the product of the roots by
  - 9
  - 5
  - 9
  - 5
- Impedance measures the opposition of an electrical circuit to the flow of electricity. The total impedance in a particular circuit is given by the formula  $Z_T = \frac{Z_1 Z_2}{Z_1 + Z_2}$ . What is the total impedance of a circuit,  $Z_T$ , if  $Z_1 = 1 + 2i$  and  $Z_2 = 1 - 2i$ ?
  - 0
  - $-\frac{3}{2}$
  - $\frac{5}{2}$
  - 1
- Express the roots of the equation  $3x^2 = -2(2x + 3)$  in simplest  $a + bi$  form.