

Xavier University of Louisiana
Study Guide for the Xavier Mathematics Placement Test

9. Solving quadratic equations by factoring and the quadratic formula, complex solutions

Multiple Choice Practice Problems

- Solve the equation $x^2 - 1 = 0$
 - $x = -1$ is the only solutions
 - $x = \pm i$
 - There are no real solutions
 - $x = \pm 1$
 - $x = 1$ is the only solution

- Solve for x : $x^2 = 7x - 10$
 - $x = 7$ and $x = 10$
 - No solutions
 - $x = -5$ and $x = -2$
 - $x = 5$ and $x = 2$
 - $x = -5$ and $x = 2$

- Transform the equation $x^2 - 4x - 3 = 0$ into an equivalent equation by completing the square.
 - $(x - 4)^2 = 7$
 - $(x - 4)^2 = 11$
 - $(x - 4)^2 = 19$
 - $(x - 2)^2 = 7$
 - $(x - 2)^2 = 1$

- Solve the equation $x^2 + 6x + 2 = 0$.
 - $x = \sqrt{7} + 3$ and $x = 3 - \sqrt{7}$
 - $x = \sqrt{7} - 6$ and $x = -\sqrt{7} - 6$
 - $x = \sqrt{7} - 3$ and $x = -\sqrt{7} - 3$

d. $x = \sqrt{11} + 3$ and $3 - \sqrt{11}$
e. $x = \sqrt{11} - 3$ and $x = -\sqrt{11} - 3$

5 Solve the equation $x^2 + 8x + 6 = 0$.

a. $x = \sqrt{22} + 4$ and $4 - \sqrt{22}$
b. $x = \sqrt{22} - 4$ and $x = -\sqrt{22} - 4$
c. $x = \sqrt{10} - 8$ and $x = -\sqrt{10} - 8$
d. $x = \sqrt{10} + 4$ and $x = 4 - \sqrt{10}$
e. $x = \sqrt{10} - 4$ and $x = -\sqrt{10} - 4$

6 Rewrite the complex number $\frac{3+7i}{9-2i}$ in the form $a + bi$.

a. $\frac{13 + 69i}{81 + 4i}$
b. $\frac{41}{85} + \frac{57}{85}i$
c. $\frac{13}{85} + \frac{69}{85}i$
d. $\frac{3}{85} + \frac{7}{85}i$
e. $\frac{13}{77} + \frac{69}{77}i$

7 The imaginary part of the complex number $6 - 9i$ is:

a. i
b. -9
c. $-9i$
d. $6 + i$
e. $6i$