

**National Institute of Open Schooling**  
**Senior Secondary Course: Mathematics**  
**Lesson 9: Quadratic Equations and Linear Inequalities**  
**Worksheet-9**

1. Solve the quadratic equation  
 $\sqrt{2}x^2 + x + \sqrt{2} = 0$
  
2. Examine the nature of roots in each of the following quadratic equations and verify them by formula.
  - (i)  $x^2 + 5x + 12 = 0$
  - (ii)  $2x^2 - 3x + 12 = 0$
  
3. Develop the quadratic equations whose roots are
  - (i) 2 and -2
  - (ii) -3 and 7
  
4. If a and b are the roots of the equation  $x^2 + 5x + 5 = 0$ , find the value of  $(a^2 + b^2)$ .
  
5. If the quadratic equation  $x^2 - 6x + P = 0$  has equal roots, then find the value of  $P + \frac{1}{P}$ .
  
6. If p and q be the roots of the equation  $2x^2 - 8x + 6 = 0$ , form a quadratic equation whose roots are  $p^2$  and  $q^2$ .
  
7. Represent the linear inequality  $4x - 16 \geq 0$  graphically.
  
8. Solve the linear inequality for real x  
 $3(x - 1) \leq 3x - 5$
  
9. Solve and show on the number line of the linear inequality  
 $5x - 3 \geq 3x - 5$
  
10. Shyam obtained 35 and 40 marks in first two unit tests. Find maximum marks, he should get in the third test to have an average of at least 30 marks.