

## Nature of the Roots of a Quadratic Equation

Value of $b^2 - 4ac$ (discriminant)	Nature of the Roots	# of $x$ -intercepts

*Practice:*

- The roots of the equation  $x^2 - 3x - 5 = 0$  are  
(1) rational                      (3) complex conjugates  
(2) irrational                    (4) equal
- If the graph of  $y = ax^2 + bx + c$  never intersects the  $x$ -axis, the value of the discriminant could be  
(1) 0                                (3)  $-3$   
(2) 3                                (4)  $1 - 3i$
- If the discriminant of  $ax^2 + bx + c = 0$  is 16, the roots of the equation must be  
(1) rational                      (3) imaginary  
(2) irrational                    (4) equal
- Find the value of  $b$  so that the roots of  $x^2 + bx + 25 = 0$  are equal.
- Find the value of  $k$  so that the roots of  $kx^2 - 12x + 9 = 0$  are equal.