DISCRIMINANT

1. Find the values of k for which the equation
   $x^2 + kx + 16 = 0$ has real roots.

2. Find the values of m for which the equation
   $x^2 + 2mx + 9 = 0$ has no real roots.

3. Find the values of p for which the equation
   $px^2 + 2x + p = 0$ has real and distinct roots.

4. Find the values of m for which the equation
   $(2m-1)x^2 + (m+1)x + 1 = 0$ has real roots.

5. Find the values of p for which the equation
   $px^2 + (p+8)x + 9 = 0$ has no real roots.

6. Show that for all real k , the roots of the equation
   $x^2 + kx + (k-1) = 0$ are always real.

7. Show that for all real p , the roots of the equation
   $px^2 + (p+1)x + 1 = 0$ are always real.

8. Show that for all real m , the roots of the equation
   $x^2 + (m+5)x + (m+4) = 0$ are always real.

9. Show that for all real k , the roots of the equation
   $kx^2 + 3x + (3-k) = 0$ are always real.

10. Show that for all real p , the roots of the equation
    $(x - 1)(x - 2) = p^2$ are always real and distinct.

DISCRIMINANT: ANSWERS

1. $k \leq -8$ or $k \geq 8$ 2. $-3 < m < 3$ 3. $-1 < p < 1$

4. $m \leq 1$ or $m \geq 5$ 5. $4 < p < 16$

6. show $(k-2)^2 \geq 0$ 7. show $(p-1)^2 \geq 0$

8. show $(m+3)^2 \geq 0$ 9. show $(2k-3)^2 \geq 0$

10. show $4p^2 + 1 > 0$