QUADRATIC EQUATIONS-1

1. If the equations $2x^2+kx-5=0$ and $x^2-3x-4=0$ have a common root finds the value of k.

2. If α,β are the roots of the equation $2x^2+6x+b=0$,then the maximum value of $\frac{\alpha}{\beta}+\frac{\beta}{\alpha}$.

3. the value of a so that the sum of the roots of the equation $x^2-(a-2)x-a-1=0$

4. The value of 'a' that the quadratic equation $2x^2-(a^3+8a-1)x+a^2-4a=0$ possess the roots of opposite sign. Ans: 0 < a <4

5. Let α,β be the roots of the equation $ax^2+bx+c=0$ and γ,δ are the roots of the equation $px^2+qx+r=0$. D_1,D_2 are the discriminants of the two equations and $\alpha,\beta,\gamma,\delta$ are in A.P then find $D_1:D_2$

6. Let α,β be the roots of the equation $ax^2+bx+c=0$ and $\alpha+h,\beta+h$ are the roots of the equation $px^2+qx+r=0$. D_1,D_2 are the discriminants of the two equations and then find $D_1:D_2$

7. The ratio of the roots of the equation $ax^2+bx+c=0$ is same as the ratio of the roots of the equation $px^2+qx+r=0$. D_1,D_2 are the discriminants of the two equations and then find $D_1:D_2$

8. If $\alpha,\beta\in R$ are roots of the equation $ax^2+bx+c=0$. Find the condition that k lies between the roots of the equation.
Solution: a f(k) <0

9. If every pair from among the equations $x^2+px+qr=0=0$,$x^2+qx+pr=0, x^2+rx+pq=0$ have a common root then find the sum of the common roots. Ans: p+q+r

10. Find the least integral value of a so that equation $x^2-2(a-1)x+(2a+1)=0$ has both roots positive. Ans: 4

11. Find the set of values of a so that both roots of the equation $x^2-4ax+2a^2-3a+5=0$ are greater than 2. (Ans: a > 9/2)

12. The value of a for which the roots of the equation $(1-a^2)x^2+2ax-1=0$ has roots belonging to the interval (0,1). Ans: $a>\frac{\sqrt{5}+1}{2}$

13. α,β are the roots of the equation $x^2-x+p=0$ and γ,δ $x^2-4x+q=0$. If $\alpha,\beta,\gamma,\delta$ are in geometric progression then find the integral values of p and q. Ans: -2,-32

14. Find the total number of integral values of a so that the equation $x^2+ax+a+1=0$. Ans: 2

15. Find the number of possible integral values of a so that the equation $x^2+ax+16=0$ has integral roots. ANS: 6 VALUES Hint: the discriminant should be a perfect square. i.e $a^2-64=\lambda^2$

Therefore $64=2\times32=4\times16=8\times8$