

X - Mathematics Assignment No. 6 - Quadratic Equation

- Q1. Find the value of k so that sum of the roots of the equation $kx^2 + 2x + 3k = 0$ is equal to their product of roots.
- Q2. Find k so that the equation $x^2 - (k+6)x + 2(2k+1) = 0$ has sum of roots is half the product of roots.
- Q3. If the equation $ax^2 - 7x + c = 0$ has 14 as the sum of the roots and also the product of roots. Find a & c .
- Q4. Find the quadratic equation whose roots are the reciprocal of the roots of the equation $3x^2 - 20x + 17 = 0$.
- Q5. Find k for real linear factors
 (i) $kx^2 - 2x + 2$ (ii) $x^2 - kx + 4$
- Q6. If (-4) is a root of the quadratic equation $x^2 + px - 4 = 0$ and the equation $x^2 + px + k = 0$ has equal roots, Find k .
- Q7. If the roots of the equation $px^2 + qx + r = 0$ are equal then show that $q^2 = 4pr$.
- Q8. Factorise (i) $2\sqrt{2}x^2 + 4x + \sqrt{2}$ (ii) $x^2 + 4\sqrt{2}x + 6$

ANS:- $K = -\frac{2}{3}$

Q2. $K = 7$

Q3. $a = \frac{1}{2}, c = 7$

Q4. $17x^2 - 20x + 3 = 0$

Q5. (i) $K \leq \frac{1}{2}$

(ii) $K \leq -4$

Q6. $K = -4$

Q8. (i) $2\sqrt{2} \left(x + \frac{1}{\sqrt{2}}\right)^2$

(ii) $(x + 3\sqrt{2})(x + \sqrt{2})$

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Q9. If α, β are the roots of the equation $px^2 + qx + r = 0$, $p \neq 0$, Find the value of $\alpha^2 + \beta^2$

Q10. If α, β are the roots of the equation $3x^2 - 6x - 5 = 0$. Find the value of the following

- (i) $\alpha - \beta$
- (ii) $\alpha^2 + \beta^2$
- (iii) $\alpha^3 + \beta^3$
- (iv) $\alpha^3 - \beta^3$
- (v) $\alpha^4 + \beta^4$
- (vi) $\alpha^4 - \beta^4$
- (vii) $\alpha^2\beta + \beta^2\alpha$
- (viii) $(\alpha + \frac{1}{\beta})(\frac{1}{\alpha} + \beta)$
- (ix) $\alpha^2 - \beta^2$
- (x) $\frac{1}{\alpha} + \frac{1}{\beta} - 2\alpha\beta$

Q9. $\frac{q^2 - pr}{p^2}$	(ii) $\frac{22}{3}$	(v) $\frac{434}{9}$	(viii) $\frac{-4}{15}$
Q10 (i) $\frac{4\sqrt{6}}{3}$	(iii) 18	(vi) $\frac{176\sqrt{6}}{9}$	(ix) $\frac{8\sqrt{6}}{3}$
	(iv) $\frac{68\sqrt{6}}{9}$	(vii) $\frac{-10}{3}$	(x) $\frac{32}{15}$

* means, a little higher level.