PRACTICE TIME

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Q.1. Find the positive root of

$$\sqrt{3x^2+6} = 9$$

Soln:

$$\sqrt{3x^2+6} = 9$$

$$\Rightarrow 3x^2+6 = 81$$

$$\Rightarrow 3x^2 = 81-6 = 75$$

$$\Rightarrow x^2 = \frac{75}{3} = 25$$

$$\Rightarrow x = \pm 5$$

$\therefore$ Positive root $= \underline{\underline{5}}$.

Q.2. Find the Value of k, for which one root of the quadratic equation $kx^2 - 14x + 8 = 0$ is six times the other.

Soln: Let one root $= \alpha$

Other root $= 6\alpha$

$\therefore$ Sum of roots $= \alpha + 6\alpha = \frac{14}{K}$

$\Rightarrow \quad 7\alpha = \frac{14}{K} \quad$ —(i)

Product of roots

$\alpha(6\alpha) = \frac{8}{K}$

$\Rightarrow \quad 6\alpha^2 = \frac{8}{K} \quad$ —(ii)

Solving (i) and (ii)

$6\left(\frac{2}{K}\right)^2 = \frac{8}{K}$

$\Rightarrow \quad 6 \times \frac{4}{K^2} = \frac{8}{K}$

$\Rightarrow \quad \frac{24}{K^2} = \frac{8}{K}$

$\Rightarrow \quad \frac{3}{K^2} = \frac{1}{K}$

$\Rightarrow \quad 3k = k^2$

$\Rightarrow \quad 3k - k^2 = 0$

$\Rightarrow \quad k(3 - k) = 0$

$\Rightarrow \quad k(3-k) = 0$

$\Rightarrow \quad k = 0$ or $k = 3$

$k = 0$ not possible

Hence $k = \underline{\underline{3}}$

Q.3. Solve the following quadratic equation for x:

$$4x^2 - 4a^2x + (a^4 - b^4) = 0.$$

Q.4. Solve for x:

$$\frac{16}{x} - 1 = \frac{15}{x+1}; \quad x \neq 0, -1$$

Q.5. Find the values of K for which the quadratic equation $9x^2 - 3kx + k = 0$ has equal roots.

Q.6. A takes 6 days less than the time taken by B to finish a piece of work. If both A and B together can finish it in 4 days, find the time taken by B to finish the work.

Q.7. Find the nature of the roots of the following quadratic equation. If the real roots exist, find them: $3x^2 - 4\sqrt{3}x + 4 = 0$.

Q.8. A dealer sells a toy for ₹24 and gains as much percent as the cost price of the toy.

(i) Find the cost price of the toy.

(ii) which mathematical concept is used in the above problem?

(iii) Which Value is depicted in this Problem?

Q.9. Find the Value of k for whic the equation $4x^2+kx+25=0$ has equal roots.

Q.10. The Sum of the Squares of two consecutive odd numbers is 394. Find the numbers.

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