

CLASS: IX

PRE-MID TERM REVISION WORKSHHET 2

Higher Order Thinking Skill Problems

1. If a and b are rational numbers and $\frac{6}{3\sqrt{2}-2\sqrt{3}} = a\sqrt{2} + b\sqrt{3}$, find the values of a and b .

2. Prove that $\frac{1}{3-\sqrt{8}} - \frac{1}{\sqrt{8}-\sqrt{7}} + \frac{1}{\sqrt{7}-\sqrt{6}} - \frac{1}{\sqrt{6}-\sqrt{5}} + \frac{1}{\sqrt{5}-2} = 5$.

3. Find the values of a and b in the following: $\frac{5+2\sqrt{3}}{7-4\sqrt{3}} = a + b\sqrt{3}$

4. If $a = (\sqrt{6} + \sqrt{5})$, then find the value of (i) $a + \frac{1}{a}$ (ii) $a - \frac{1}{a}$ (iii) $a^2 + \frac{1}{a^2}$ (iv) $a^2 - \frac{1}{a^2}$

5. $x = \frac{\sqrt{3} + \sqrt{2}}{\sqrt{3} - \sqrt{2}}$ and $y = \frac{1}{x}$, find the value of $x^2 + y^2 + xy$.

6. Factorise the following:

(a) $125a^3 - 216b^3$

(b) $x^3 + y^3 - 12xy + 64$

(c) $x^3 + 8x^2 - 7x - 2$

7. If $(x^2 - 1)$ is a factor of $(ax^4 + bx^3 + cx^2 + dx + e)$, then show that

$$(a + c + e) = (b + d) = 0$$

8. Simplify: $\frac{\left(\frac{a^2 + b^2}{a^2 - b^2} - \frac{a^2 - b^2}{a^2 + b^2}\right)}{\left(\frac{a + b}{a - b} - \frac{a - b}{a + b}\right)}$