

NUMBER SYSTEM

ASSIGNMENT-2

1. Find the value of a and b, if:

$$a. \frac{7+3\sqrt{5}}{7-3\sqrt{5}} = a + \sqrt{5}b$$

$$b. \frac{\sqrt{7}-1}{\sqrt{7}+1} - \frac{\sqrt{7}+1}{\sqrt{7}-1} = a + \sqrt{7}b$$

2. Rationalise the denominator of: $\frac{1}{(\sqrt{6}+\sqrt{5})-\sqrt{11}}$.

3. If $a=7-4\sqrt{3}$, find the value of $\sqrt{a} + \frac{1}{\sqrt{a}}$.

4. If $a = \frac{4}{3-\sqrt{5}}$, find the value of $a + \frac{4}{a}$.

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

6. Simplify: $\frac{\sqrt{6}}{\sqrt{2}+\sqrt{3}} + \frac{3\sqrt{2}}{\sqrt{6}+\sqrt{3}} - \frac{4\sqrt{3}}{\sqrt{6}+\sqrt{2}}$

7. Simplify: $\frac{1}{1+\sqrt{2}} + \frac{1}{\sqrt{2}+\sqrt{3}} + \frac{2}{\sqrt{3}+\sqrt{5}}$.

8. If $a = \frac{2-\sqrt{5}}{3+\sqrt{5}}$ and $b = \frac{2+\sqrt{5}}{3-\sqrt{5}}$, find $a^2 + b^2$.

9. If $a = \frac{\sqrt{2}+1}{\sqrt{2}-1}$ and $b = \frac{1}{a}$, find value of $a^2 - b^2$.

10. If $a = \frac{3-\sqrt{5}}{3+\sqrt{5}}$ and $b = \frac{3+\sqrt{5}}{3-\sqrt{5}}$, find $a^2 + b^2$.
11. If $x=5-2\sqrt{6}$, find the value of x^2+1/x^2 .
12. If $x = \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$ and $y = \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}$, find $x^2 + y^2 + xy$.
13. If $x=3-2\sqrt{2}$ find the value of x^3+1/x^3 .
14. If $x=3+2\sqrt{2}$, find the value of $(x-1/x)^3$.
15. If $x=9+4\sqrt{5}$, find $\sqrt{x}+1/\sqrt{x}$.
16. If $\sqrt{2}=1.414$, $\sqrt{3}=1.732$, then find the value of $\frac{4}{3\sqrt{3}-2\sqrt{2}} + \frac{3}{3\sqrt{3}+2\sqrt{2}}$.
17. If $x=\frac{\sqrt{7}}{5}$ and $\frac{5}{x} = p\sqrt{7}$, find p .
18. Arrange in ascending order: $\sqrt{3}$, $\sqrt[3]{4}$, $\sqrt[4]{6}$.
19. If $y = \frac{\sqrt{a+2b}+\sqrt{a-2b}}{\sqrt{a+2b}-\sqrt{a-2b}}$, prove that $by^2 - ay + b = 0$.
20. Simplify $\sqrt[4]{\sqrt[3]{x^2}}$ and express the result in exponential form of x .