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NUMBER SYSTEM

ASSIGNMENT NO. 18

1. Find the value of $\left(x-\frac{1}{x}\right)^3$ if $x=1+\sqrt{2}$
2. Evaluate: $125^{-\frac{1}{3}}\left(125^{\frac{1}{3}}-125^{\frac{2}{3}}\right)$
3. If $x=\frac{1}{2-\sqrt{3}}$, find the value of $2x^3-2x^2-7x+5$
4. Simplify: $\frac{2\sqrt{6}}{\sqrt{2}+\sqrt{3}}+\frac{6\sqrt{2}}{\sqrt{6}+\sqrt{3}}-\frac{8\sqrt{3}}{\sqrt{6}+\sqrt{2}}$
5. $a=\frac{\sqrt{3}+1}{\sqrt{3}-1}$ and $b=\frac{1}{a}$, find the value of a^2+ab-b^2
6. Express $0.15\overline{9}$ in the form of $\frac{p}{q}$, where p and q are integers and $q\neq 0$.
7. If $x=3+2\sqrt{2}$, then find the value of $\left(x-\frac{1}{x}\right)^3$
8. If $x=9+4\sqrt{5}$, find the value of $\sqrt{x}-\frac{1}{\sqrt{x}}$
9. Simplify: $\frac{1}{1+\sqrt{2}}+\frac{1}{\sqrt{2}+\sqrt{3}}+\frac{2}{\sqrt{3}+\sqrt{5}}$
10. If $x=\frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$ and $y=\frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}$, find the value of x^2+y^2+xy.

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