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NUMBER SYSTEM

ASSIGNMENT NO. 11

1. Prove that: $\frac{1}{1+\sqrt{2}} + \frac{1}{\sqrt{2}+\sqrt{3}} + \frac{1}{\sqrt{3}+\sqrt{4}}$ is a rational number.
2. Simplify: $3\sqrt[3]{40} - 4\sqrt[3]{320} - \sqrt[3]{5}$
3. Solve: $0.\overline{6} + 0.4\overline{7}$
4. Represent $\sqrt{2}$ on the number line.
5. Evaluate: $\frac{7\sqrt{3}}{\sqrt{10}+\sqrt{3}} - \frac{3\sqrt{2}}{\sqrt{15}+3\sqrt{2}} - \frac{2\sqrt{5}}{\sqrt{6}+\sqrt{5}}$
6. Evaluate: $\frac{\left(\frac{9}{4}\right)^{-\frac{3}{2}} \times \left(\frac{125}{27}\right)^{-\frac{2}{3}} \times \left(\frac{3}{5}\right)^{-2}}{\left(\sqrt{2}\right)^{4}}$
7. If $x^a = y, y^b = z$ and $z^c = x$, then prove that $abc = 1$.
8. Write in simplest form: $8\sqrt{45} + 2\sqrt{50} - 3\sqrt{147}$
9. Simplify: $\left[5^2\left(8^{\frac{1}{3}} + 27^{\frac{1}{3}}\right)^3\right]^{\frac{1}{5}}$
10. Express $0.\overline{235}$ in the form $\frac{p}{q}$ where p and q are integers, $q \neq 0$.