NUMBER SYSTEM

1. Write three irrational number between √2 and √3.
2. Write decimal form of 3/18.
3. Find x, if $3^x + 3^{x+1} = 36$.
4. Simplify $2\sqrt{50} + 3\sqrt{32} + 4\sqrt{18}$.

5. If √2 = 1.4 and √3 = 1.7, find the value of $\frac{1}{\sqrt{3}-\sqrt{2}}$.
6. If x = 4 - √15, find the value of $\left(x + \frac{1}{x}\right)^2$.
7. If $a = \frac{2^{x-1}}{2^{x-2}}, b = \frac{2^{-x}}{2^{x+1}}$ and $a - b = 0$, find the value of x.
8. Prove that $\frac{1}{\sqrt{2}+1} + \frac{1}{\sqrt{3}+\sqrt{2}} + \frac{1}{2+\sqrt{3}} = 1$

9. Find the $\sqrt{7 + \sqrt{48}}$.
10. Find the value of $4x^2 + \frac{1}{x^2}$, if $x = \frac{3+\sqrt{7}}{2}$.
11. Prove that m-n=2, if $\frac{9^{n+1} \times 3^{(-n/2)^{-2}} - 27^n}{(3^m \times 2)^3} = \frac{1}{729}$.
12. If $\frac{2\sqrt{6}-\sqrt{5}}{\sqrt{45}-\sqrt{24}} = a + b\sqrt{30}$, find the value of a and b.

13.Prove that $\frac{a^{-1}}{a^{-1}+b^{-1}} + \frac{a^{-1}}{a^{-1}-b^{-1}} = \frac{2b^2}{b^2-a^2}$

14. If a= 5+2 √6 and b=1/a, then find the value of a^2+b^2

15. If $2^x = 5^y = 10^z$, then prove that $\frac{1}{x} + \frac{1}{y} = \frac{1}{z}$

16. If $a = \frac{\sqrt{5}-\sqrt{3}}{\sqrt{5}+\sqrt{3}}$ and $b = \frac{\sqrt{5}+\sqrt{3}}{\sqrt{5}-\sqrt{3}}, find$ $a^2 + b^2 - 6ab.$