

1. If $p = 5 + 2\sqrt{6}$ and $x = \frac{1}{p}$, then what will be the value of $p^2 + x^2$.
2. Represent $\sqrt{9.3}$ on the number line.
3. Show that $\frac{1}{1+x^{a-b}} + \frac{1}{1+x^{b-a}} = 1$
4. Show that: $\frac{(x^{(a+b)^2})(x^{(b+c)^2})(x^{(c+a)^2})}{(x^a x^b x^c)^4} = 1$
5. If $\frac{7+\sqrt{5}}{7-\sqrt{5}} - \frac{7-\sqrt{5}}{7+\sqrt{5}} = a + b\sqrt{5}$, find the value of a and b .
6. If $a = 2, b = 3$, then find the value of:
 - a. $(a^b + b^a)^{-1}$
 - b. $(a^a + b^b)^{-1}$
7. Simplify: $\frac{\sqrt{6}}{\sqrt{2}+\sqrt{3}} + \frac{3\sqrt{2}}{\sqrt{6}+\sqrt{3}} - \frac{4\sqrt{3}}{\sqrt{6}+\sqrt{2}}$
8. Simplify: $(\sqrt{x})^{-\frac{2}{3}} \sqrt[3]{y^4} \div \sqrt{(xy)^{-\frac{1}{2}}}$
9. Prove that: $\frac{a^{-1}}{a^{-1}+b^{-1}} + \frac{a^{-1}}{a^{-1}-b^{-1}} = \frac{-(2b)^2}{a^2-b^2}$
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 $x^2 + y^2 + xy$ if $\sqrt{6} = 2.4$