

1. Simplify: $\frac{\sqrt{5}-2}{\sqrt{5}+2} - \frac{\sqrt{5}+2}{\sqrt{5}-2}$
2. Evaluate: $\frac{40}{2\sqrt{10}+\sqrt{20}+\sqrt{40}-2\sqrt{5}}$, when it is given that $\sqrt{10} = 3.162$
3. If $(4)^{2x-1} - (16)^{x-1} = 384$, then find the value of x .
4. Assuming that x, y, z are positive real numbers and the exponents are all rational numbers, show that: $\left(\frac{x^a}{x^b}\right)^{a^2+ab+b^2} \cdot \left(\frac{x^b}{x^c}\right)^{b^2+bc+c^2} \cdot \left(\frac{x^c}{x^a}\right)^{c^2+ca+a^2} = 1$
5. Taking $\sqrt{2} = 1.414$ and $\pi = 3.141$, evaluate $\frac{1}{\sqrt{2}} + \pi$ upto three places of decimal.
6. Find the decimal expansion of $1\frac{1}{7}$.
7. Simplify: $4\sqrt{20} + \frac{1}{2}\sqrt{245} - \sqrt{405}$
8. Evaluate: $(\sqrt{5} + 2\sqrt{2})^2 - (\sqrt{5} - \sqrt{8})^2$
9. If $a = 7 - 4\sqrt{3}$, then find the value of $\sqrt{a} + \frac{1}{\sqrt{a}}$
10. Simplify: $\left(\frac{81}{16}\right)^{-\frac{3}{4}} \times \left\{ \left(\frac{25}{9}\right)^{-\frac{3}{2}} \div \left(\frac{5}{2}\right)^{-3} \right\}$