

1)

If $x = \frac{1}{3-\sqrt{8}}$, find the value of $x^3 - 2x^2 - 7x + 5$.

2)

Express $\frac{3}{\sqrt{3}-\sqrt{2}+\sqrt{5}}$ with rational denominator.

$$\frac{164}{99}$$

3)

If $x = \frac{5-\sqrt{21}}{2}$, prove that

$$\left(x^3 + \frac{1}{x^3}\right) - 5\left(x^2 + \frac{1}{x^2}\right) + \left(x + \frac{1}{x}\right) = 0.$$

4)

Find the values of a and b if

$$\frac{7+3\sqrt{5}}{3+\sqrt{5}} - \frac{7-3\sqrt{5}}{3-\sqrt{5}} = a + \sqrt{5}b.$$

5)

If a and b are rational numbers and $\frac{4+3\sqrt{5}}{4-3\sqrt{5}} = a + b\sqrt{5}$, find the values of a and b .

6)

Find the values of a and b if $\frac{3+\sqrt{2}}{3-\sqrt{2}} = a + b\sqrt{2}$.

7)

Simplify $\frac{\sqrt{72}}{5\sqrt{72} + 3\sqrt{288} - 2\sqrt{648}}$.

8)

Express in the form of $\frac{p}{q}$: $0.\overline{38} + 1.\overline{27}$.