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1. If $\frac{(\sqrt{3}-1)}{\sqrt{3}+1} = a + b\sqrt{3}$, find the values of a and b.

2. Prove that: $\frac{1}{2+\sqrt{3}} + \frac{2}{\sqrt{5}-\sqrt{3}} - \frac{1}{2-\sqrt{5}} = 0$

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

4. If $\sqrt{18 - 6\sqrt{5}} = \sqrt{a} - \sqrt{b}$, then prove that: $a + b = 18$

5. Evaluate: $\frac{\sqrt{5}+\sqrt{2}}{\sqrt{5}-\sqrt{2}}$, given that $\sqrt{10} = 3.162$

6. If $\frac{3+\sqrt{7}}{3-4\sqrt{7}} = a + b\sqrt{7}$, where a and b are rational numbers, find a and b.

7. If $x = \frac{\sqrt{5}-\sqrt{2}}{\sqrt{5}+\sqrt{2}}$ and $y = \frac{\sqrt{5}+\sqrt{2}}{\sqrt{5}-\sqrt{2}}$, find the value of $x^2 + xy + y^2$

8. Rationalise the denominator of $\frac{1}{\sqrt{7}+\sqrt{6}-\sqrt{13}}$

9. Simplify: $\sqrt{\frac{\sqrt{20}+\sqrt{11}}{\sqrt{20}-\sqrt{11}}}$

10. Rationalise the denominator of $\frac{\sqrt{3}-\sqrt{4}}{\sqrt{3}+\sqrt{4}-\sqrt{7}}$