**Rationalising the Denominator Proof**

(a) Show that $\frac{5+\sqrt{3}}{2-\sqrt{3}}$ can be written in the form $a+b\sqrt{3}$, where $a$ and $b$ are integers to be found.

(b) Show that $\frac{8-\sqrt{2}}{2+\sqrt{2}}$ can be written in the form $a+b\sqrt{2}$, where $a$ and $b$ are integers to be found.

(c) Show that $\frac{4\sqrt{2}-1}{3+\sqrt{8}}$ can be written in the form $a\sqrt{2}+b$, where $a$ and $b$ are integers to be found.

(d) Show that $\frac{2+\sqrt{20}}{3-\sqrt{5}}×3\sqrt{5}$ can be written in the form $a+b\sqrt{5}$, where $a$ and $b$ are integers to be found.

(e) Show that $\frac{(2+2\sqrt{7})^{2}}{3-\sqrt{7}}$ can be written in the form $a+b\sqrt{7}$, where $a$ and $b$ are integers to be found.

(f) Show that $\frac{\sqrt{8}(4-3\sqrt{2})}{\sqrt{2}+1}+5(4-\sqrt{2})$ can be written in the form $a+b\sqrt{2}$, where $a$ and $b$ are integers to be found.

(g) Given that $\frac{a+\sqrt{12}}{2-\sqrt{3}}=b+10\sqrt{3}$

find the values of $a$ and $b$.

(h) Given that

$$\frac{a}{\left(1+\sqrt{3}\right)^{2}}+\left(a\sqrt{3}\right)^{3}=2+b\sqrt{3}$$

find the values of $a$ and $b$.

**Rationalising the Denominator Proof**

(a) Show that $\frac{5+\sqrt{3}}{2-\sqrt{3}}$ can be written in the form $a+b\sqrt{3}$, where $a$ and $b$ are integers to be found.

(b) Show that $\frac{8-\sqrt{2}}{2+\sqrt{2}}$ can be written in the form $a+b\sqrt{2}$, where $a$ and $b$ are integers to be found.

(c) Show that $\frac{4\sqrt{2}-1}{3+\sqrt{8}}$ can be written in the form $a\sqrt{2}+b$, where $a$ and $b$ are integers to be found.

(d) Show that $\frac{2+\sqrt{20}}{3-\sqrt{5}}×3\sqrt{5}$ can be written in the form $a+b\sqrt{5}$, where $a$ and $b$ are integers to be found.

(e) Show that $\frac{(2+2\sqrt{7})^{2}}{3-\sqrt{7}}$ can be written in the form $a+b\sqrt{7}$, where $a$ and $b$ are integers to be found.

(f) Show that $\frac{\sqrt{8}(4-3\sqrt{2})}{\sqrt{2}+1}+5(4-\sqrt{2})$ can be written in the form $a+b\sqrt{2}$, where $a$ and $b$ are integers to be found.

(g) Given that $\frac{a+\sqrt{12}}{2-\sqrt{3}}=b+10\sqrt{3}$

find the values of $a$ and $b$.

(h) Given that

$$\frac{a}{\left(1+\sqrt{3}\right)^{2}}+\left(a\sqrt{3}\right)^{3}=2+b\sqrt{3}$$

find the values of $a$ and $b$.