



1. Simplify $\frac{(-\sqrt{5})}{(\sqrt{3}+\sqrt{4})} + \frac{\sqrt{4}}{(\sqrt{4}+\sqrt{2})} + \frac{(-\sqrt{3})}{(\sqrt{3}-\sqrt{2})}$

(i) $(\sqrt{15}-2\sqrt{5}-1-\sqrt{5}-\sqrt{6})$ (ii) $(\sqrt{12}-2\sqrt{5}-1-\sqrt{2}-\sqrt{6})$ (iii) $(\sqrt{15}-2\sqrt{5}+0-\sqrt{2}-\sqrt{6})$

(iv) $(\sqrt{15}-2\sqrt{5}-1-\sqrt{2}-\sqrt{6})$ (v) $(\sqrt{15}-2\sqrt{5}-1-\sqrt{2}-\sqrt{6})$

2. Simplify $\frac{\sqrt{5}}{(-\sqrt{2}+\sqrt{4})} + \frac{(-\sqrt{7})}{(\sqrt{4}+\sqrt{5})} + \frac{(-\sqrt{4})}{(-\sqrt{9}+\sqrt{6})}$

(i) $(\frac{1}{2}\sqrt{10}+\sqrt{5}+2\sqrt{7}-\sqrt{35}+2+\frac{2}{3}\sqrt{6})$ (ii) $(\frac{1}{2}\sqrt{10}+\sqrt{5}+2\sqrt{7}-\sqrt{35}+2+\frac{2}{3}\sqrt{6})$

(iii) $(\frac{1}{2}\sqrt{10}+\sqrt{5}+2\sqrt{7}-\sqrt{35}+2+\frac{2}{3}\sqrt{6})$ (iv) $(\frac{1}{2}\sqrt{10}+\sqrt{5}+2\sqrt{7}-\sqrt{37}+2+\frac{2}{3}\sqrt{6})$

(v) $(\frac{1}{2}\sqrt{7}+\sqrt{5}+2\sqrt{7}-\sqrt{35}+2+\frac{2}{3}\sqrt{6})$

3. Simplify $\frac{(-\sqrt{4})}{(\sqrt{4}+\sqrt{5})} + \frac{\sqrt{2}}{(\sqrt{5}+\sqrt{3})} + \frac{\sqrt{4}}{(\sqrt{3}+\sqrt{2})}$

(i) $(4-2\sqrt{5}+\frac{1}{2}\sqrt{10}-\frac{1}{2}\sqrt{6}+2\sqrt{3}-2\sqrt{2})$ (ii) $(4-2\sqrt{5}+\frac{1}{2}\sqrt{10}-\frac{1}{2}\sqrt{6}+2\sqrt{3}-2\sqrt{2})$

(iii) $(4-2\sqrt{5}+\frac{1}{2}\sqrt{10}-\frac{1}{2}\sqrt{8}+2\sqrt{3}-2\sqrt{2})$ (iv) $(4-2\sqrt{5}+\frac{1}{2}\sqrt{10}-\frac{1}{2}\sqrt{6}+2\sqrt{3}-2\sqrt{2})$

(v) $(1-2\sqrt{5}+\frac{1}{2}\sqrt{10}-\frac{1}{2}\sqrt{6}+2\sqrt{3}-2\sqrt{2})$

4. Simplify $\frac{(-\sqrt{3})}{(-\sqrt{8}-\sqrt{9})} + \frac{\sqrt{4}}{(\sqrt{6}+\sqrt{7})} + \frac{(-\sqrt{3})}{(\sqrt{8}-\sqrt{6})}$

(i) $(-5\sqrt{6}+3\sqrt{3}+2\sqrt{7}-\frac{1}{2}\sqrt{18})$ (ii) $(-5\sqrt{6}+3\sqrt{3}+2\sqrt{7}-\frac{1}{2}\sqrt{18})$ (iii) $(-5\sqrt{4}+3\sqrt{3}+2\sqrt{7}-\frac{1}{2}\sqrt{18})$

(iv) $(-5\sqrt{6}+3\sqrt{3}+2\sqrt{7}-\frac{1}{2}\sqrt{18})$ (v) $(-5\sqrt{6}+3\sqrt{3}+2\sqrt{7}-\frac{1}{2}\sqrt{21})$

5. Simplify $\frac{\sqrt{2}}{(-\sqrt{3}+\sqrt{2})} + \frac{\sqrt{4}}{(\sqrt{3}+\sqrt{4})} + \frac{\sqrt{3}}{(-\sqrt{5}-\sqrt{2})}$

(i) $(-\frac{2}{3}\sqrt{6}+2-2\sqrt{3}-\frac{1}{3}\sqrt{15})$ (ii) $(-\frac{2}{3}\sqrt{6}+2-2\sqrt{3}-\frac{1}{3}\sqrt{15})$ (iii) $(-\frac{2}{3}\sqrt{6}+2-2\sqrt{3}-\frac{1}{3}\sqrt{18})$

(iv) $(-\frac{2}{3}\sqrt{6}+3-2\sqrt{3}-\frac{1}{3}\sqrt{15})$ (v) $(-\frac{2}{3}\sqrt{4}+2-2\sqrt{3}-\frac{1}{3}\sqrt{15})$

6. Simplify $\frac{(-\sqrt{3})}{(\sqrt{9}+\sqrt{5})} - \frac{\sqrt{2}}{(-\sqrt{6}-\sqrt{3})} + \frac{(-\sqrt{8})}{(\sqrt{2}-\sqrt{5})}$

(i) $(-\frac{1}{12}\sqrt{3}+\frac{1}{4}\sqrt{15}-\frac{1}{3}\sqrt{6}+\frac{4}{3}+\frac{2}{3}\sqrt{10})$ (ii) $(-\frac{1}{12}\sqrt{3}+\frac{1}{4}\sqrt{15}-\frac{1}{3}\sqrt{6}+2+\frac{2}{3}\sqrt{10})$

(iii) $(-\frac{1}{12}\sqrt{3}+\frac{1}{4}\sqrt{15}-\frac{1}{3}\sqrt{6}+\frac{4}{3}+\frac{2}{3}\sqrt{10})$ (iv) $(-\frac{1}{12}\sqrt{3}+\frac{1}{4}\sqrt{15}-\frac{1}{3}\sqrt{6}+\frac{4}{3}+\frac{2}{3}\sqrt{10})$

(v) $(-\frac{1}{12}\sqrt{3}+\frac{1}{4}\sqrt{15}-\frac{1}{3}\sqrt{6}+\frac{4}{3}+\frac{2}{3}\sqrt{10})$

7. Simplify $\frac{(-\sqrt{3})}{(\sqrt{4}+\sqrt{3})} + \frac{(-\sqrt{4})}{(-\sqrt{5}-\sqrt{4})} + \frac{(-\sqrt{3})}{(-\sqrt{2}-\sqrt{3})}$

(i) $(-2\sqrt{3}+2+2\sqrt{5}-\sqrt{6})$ (ii) $(-2\sqrt{3}+3+2\sqrt{5}-\sqrt{6})$ (iii) $(-2+2+2\sqrt{5}-\sqrt{6})$ (iv) $(-2\sqrt{3}+2+2\sqrt{5}-\sqrt{6})$

(v) $(-2\sqrt{3}+2+2\sqrt{5}-\sqrt{8})$

8. Simplify $\frac{\sqrt{3}}{(\sqrt{8}+\sqrt{7})} - \frac{\sqrt{6}}{(\sqrt{7}-\sqrt{5})} - \frac{(-\sqrt{3})}{(\sqrt{5}-\sqrt{4})}$

(i) $(2\sqrt{6}-\sqrt{21}-\frac{1}{2}\sqrt{42}-\frac{1}{2}\sqrt{30}+\sqrt{15}+2\sqrt{3})$ (ii) $(2\sqrt{4}-\sqrt{21}-\frac{1}{2}\sqrt{42}-\frac{1}{2}\sqrt{30}+\sqrt{15}+2\sqrt{3})$

(iii) $(2\sqrt{6}-\sqrt{21}-\frac{1}{2}\sqrt{42}-\frac{1}{2}\sqrt{33}+\sqrt{15}+2\sqrt{3})$ (iv) $(2\sqrt{6}-\sqrt{21}-\frac{1}{2}\sqrt{42}-\frac{1}{2}\sqrt{30}+\sqrt{15}+2\sqrt{3})$

(v) $(2\sqrt{6}-\sqrt{21}-\frac{1}{2}\sqrt{42}-\frac{1}{2}\sqrt{30}+\sqrt{15}+2\sqrt{3})$

9. Simplify $\frac{\sqrt{3}}{(\sqrt{2}-\sqrt{4})} - \frac{(-\sqrt{5})}{(-\sqrt{3}-\sqrt{2})} - \frac{\sqrt{4}}{(-\sqrt{2}-\sqrt{5})}$

(i) $(-\frac{1}{2}\sqrt{6}-\sqrt{3}-\sqrt{15}+\sqrt{10}-\frac{2}{3}\sqrt{2}+\frac{2}{3}\sqrt{5})$ (ii) $(-\frac{1}{2}\sqrt{6}-\sqrt{3}-\sqrt{15}+\sqrt{10}-\frac{2}{3}\sqrt{2}+\frac{2}{3}\sqrt{5})$

(iii) $(-\frac{1}{2}\sqrt{6}-\sqrt{3}-\sqrt{15}+\sqrt{10}-\frac{2}{3}\sqrt{2}+\frac{2}{3}\sqrt{5})$ (iv) $(-\frac{1}{2}\sqrt{3}-\sqrt{3}-\sqrt{15}+\sqrt{10}-\frac{2}{3}\sqrt{2}+\frac{2}{3}\sqrt{5})$

(v) $(-\frac{1}{2}\sqrt{6}-\sqrt{3}-\sqrt{15}+\sqrt{13}-\frac{2}{3}\sqrt{2}+\frac{2}{3}\sqrt{5})$

10. Simplify $\frac{\sqrt{7}}{(\sqrt{5}-\sqrt{3})} + \frac{(-\sqrt{6})}{(-\sqrt{7}+\sqrt{6})} - \frac{\sqrt{7}}{(-\sqrt{8}+\sqrt{7})}$

(i) $(\frac{1}{2}\sqrt{33}+\frac{1}{2}\sqrt{21}+\sqrt{42}+13+2\sqrt{14})$ (ii) $(\frac{1}{2}\sqrt{35}+\frac{1}{2}\sqrt{21}+\sqrt{42}+13+2\sqrt{14})$

(iii) $(\frac{1}{2}\sqrt{35}+\frac{1}{2}\sqrt{21}+\sqrt{42}+13+2\sqrt{14})$ (iv) $(\frac{1}{2}\sqrt{35}+\frac{1}{2}\sqrt{21}+\sqrt{42}+16+2\sqrt{14})$

(v) $(\frac{1}{2}\sqrt{35}+\frac{1}{2}\sqrt{21}+\sqrt{42}+13+2\sqrt{14})$

Assignment Key

1) (iv)

2) (ii)

3) (iv)

4) (i)

5) (i)

6) (iii)

7) (iv)

8) (i)

9) (iii)

10) (iii)