I.E.S.O. Vega de Toranzo
Soluciones de ejercicios. 4^o E.S.O. (Opción B)

Pág. 39, ej. 49 Simplifica las expresiones siguientes:

(a) $\frac{(\sqrt{\mathbf{3}}+\mathbf{1})^{\mathbf{2}}}{\sqrt{\mathbf{3}}-\mathbf{1}}+\frac{(\sqrt{\mathbf{3}}-\mathbf{1})^{\mathbf{2}}}{\sqrt{\mathbf{3}}+\mathbf{1}}$

(b) $(\frac{\sqrt{\mathbf{6}}-\sqrt{\mathbf{3}}}{\sqrt{\mathbf{6}}+\sqrt{\mathbf{3}}})(\mathbf{3}+\mathbf{2}\sqrt{\mathbf{2}})$

(c) $\frac{(\sqrt{\mathbf{5}}+\mathbf{1})^{\mathbf{2}}}{\sqrt{\mathbf{5}}-\mathbf{1}}-\mathbf{3}\sqrt{\mathbf{5}}$

(a) $\frac{(\sqrt{3}+1)^2}{\sqrt{3}-1}+\frac{(\sqrt{3}-1)^2}{\sqrt{3}+1}=\frac{(3+2\sqrt{3}+1)(\sqrt{3}+1)}{3-1}+\frac{(3-2\sqrt{3}+1)(\sqrt{3}-1)}{3-1}=\frac{(4+2\sqrt{3})(\sqrt{3}+1)}{2}+\frac{(4-2\sqrt{3})(\sqrt{3}-1)}{2}=\frac{4\sqrt{3}+4+2(\sqrt{3})^2+2\sqrt{3}}{2}+\frac{4\sqrt{3}-4-2(\sqrt{3})^2+2\sqrt{3}}{2}=\frac{10+6\sqrt{3}}{2}+\frac{-10+6\sqrt{3}}{2}=\frac{12\sqrt{3}}{2}=6\sqrt{3}$

(b) $(\frac{\sqrt{6}-\sqrt{3}}{\sqrt{6}+\sqrt{3}})(3+2\sqrt{2})=[\frac{(\sqrt{6}-\sqrt{3})(\sqrt{6}-\sqrt{3})}{(\sqrt{6})^2-(\sqrt{3})^2}](3+2\sqrt{2})=[\frac{(\sqrt{6}-\sqrt{3})^2}{6-3}](3+2\sqrt{2})=\frac{6-2\sqrt{6}\sqrt{3}+3}{3}(3+2\sqrt{2})=\frac{9-2\sqrt{18}}{3}(3+2\sqrt{2})=\frac{9-2\sqrt{2\cdot 3^2}}{3}(3+2\sqrt{2})=\frac{9-2\cdot 3\sqrt{2}}{3}(3+2\sqrt{2})=\frac{9-6\sqrt{2}}{3}(3+2\sqrt{2})=\frac{27+18\sqrt{2}-18\sqrt{2}-12(\sqrt{2})^2}{3}=\frac{27-12\cdot 2}{3}=\frac{27-24}{3}=\frac{3}{3}=1$

(c) $\frac{(\sqrt{5}+1)^2}{\sqrt{5}-1}-3\sqrt{5}=\frac{(5+2\sqrt{5}+1)(\sqrt{5}+1)}{5-1}-3\sqrt{5}=\frac{(6+2\sqrt{5})(\sqrt{5}+1)}{4}-3\sqrt{5}=\frac{(6\sqrt{5}+6+2(\sqrt{5})^2+2\sqrt{5})}{4}-3\sqrt{5}=\frac{8\sqrt{5}+6+2\cdot 5}{4}-3\sqrt{5}=\frac{8\sqrt{5}+16}{4}-3\sqrt{5}=2\sqrt{5}+4-3\sqrt{5}=4-\sqrt{5}$