Zadatak 10. Dokaži da su brojevi

1) $(1-\sqrt{2})^2(3+2\sqrt{2})$;

2) $(\sqrt{3}+1)^2(4-2\sqrt{3})$;

3) $(\sqrt[6]{9+4\sqrt{5}}+\sqrt[3]{2+\sqrt{5}})\cdot\sqrt[3]{2-\sqrt{5}}$

racionalni.

Rješenje. **1)** $(1-\sqrt{2})^2(3+2\sqrt{2})=(3-2\sqrt{2})(3+2\sqrt{2})=9-4\cdot 2=1$;

2) $(\sqrt{3}+1)^2(4-2\sqrt{3})=(4+2\sqrt{3})(4-2\sqrt{3})=16-4\cdot 3=4$;

3) $(\sqrt[6]{9+4\sqrt{5}}+\sqrt[3]{2+\sqrt{5}})\cdot\sqrt[3]{2-\sqrt{5}}$

$=\sqrt[6]{9+4\sqrt{5}}\cdot\sqrt[3]{2-\sqrt{5}}+\sqrt[3]{2+\sqrt{5}}\cdot\sqrt[3]{2-\sqrt{5}}$

$=\sqrt[6]{9+4\sqrt{5}}\cdot\sqrt[6]{(2-\sqrt{5})^2}+\sqrt[3]{4-5}=\sqrt[6]{9+4\sqrt{5}}\cdot\sqrt[6]{(9-4\sqrt{5})^2}-1$

$=\sqrt[6]{81-80}-1=1-1=0$.