

Bài tập: Liên hệ giữa phép nhân chia và khai phương

I. LT

- Nếu $A, B \geq 0$ suy ra $\sqrt{A \cdot B} = \sqrt{A} \cdot \sqrt{B}$ và ngược lại, tương tự với chia (lưu ý B dương)

II. Bài tập

1. Tính:

a) $\sqrt{9 \cdot 64 \cdot 0,25}$; b) $\sqrt{5 \cdot 30 \cdot 42 \cdot 28}$; c) $\sqrt{2,5 \cdot 16,9}$; d) $\sqrt{252} - \sqrt{700} + \sqrt{1008} - \sqrt{448}$;

e) $\sqrt{\frac{1}{8}} \cdot \sqrt{2} \cdot \sqrt{125} \cdot \sqrt{\frac{1}{5}}$; f) $\sqrt{1 \frac{9}{16} \cdot 5 \frac{4}{9} \cdot 0,01}$; g) $\sqrt{\frac{149^2 - 76^2}{457^2 - 384^2}}$; h) $\frac{5\sqrt{7} + 7\sqrt{5}}{\sqrt{35}}$; i) $(2\sqrt{8} - 3\sqrt{3} + 1) : \sqrt{6}$;

k) $(\sqrt{\frac{9}{2}} + \frac{1}{2}\sqrt{32} - 4\sqrt{72}) : \sqrt{2}$; l) $(\frac{1}{2}\sqrt{\frac{1}{2}} - \frac{3}{2}\sqrt{4,5} + \frac{2}{5}\sqrt{50}) : \frac{4}{15}\sqrt{\frac{1}{8}}$; m) $2\sqrt{40\sqrt{12}} - 2\sqrt{\sqrt{75}} - 3\sqrt{5\sqrt{48}}$

n) $(12\sqrt{50} - 8\sqrt{200} + 7\sqrt{450}) : \sqrt{10}$

2. Rút gọn:

a) $\frac{\sqrt{6} + \sqrt{14}}{2\sqrt{3} + \sqrt{28}}$; b) $\frac{9\sqrt{5} + 3\sqrt{27}}{\sqrt{5} + \sqrt{3}}$; c) $\frac{\sqrt{15} - \sqrt{6}}{\sqrt{35} - \sqrt{14}}$; d) $\frac{3\sqrt{8} - 2\sqrt{12} + \sqrt{20}}{3\sqrt{18} - 2\sqrt{27} + \sqrt{45}}$; e) $\frac{\sqrt{2} + \sqrt{3} + \sqrt{6} + \sqrt{8} + 4}{\sqrt{2} + \sqrt{3} + \sqrt{4}}$;

f) $\frac{2\sqrt{15} - 2\sqrt{10} + \sqrt{6} - 3}{2\sqrt{5} - 2\sqrt{10} - \sqrt{3} + \sqrt{6}}$; g) $(1 - \sqrt{2} + \sqrt{3})(1 - \sqrt{2} - \sqrt{3})$; h) $(\sqrt{5} + \sqrt{2} + 1)(\sqrt{5} - 1)$

3. Rút gọn:

a) $A = \sqrt{4 + 2\sqrt{3}} - \sqrt{4 - 2\sqrt{3}}$; b) $B = \sqrt{4 + \sqrt{7}} - \sqrt{4 - \sqrt{7}} - \sqrt{2}$; c) $C = \sqrt{(\sqrt{2} - 3)^2} \cdot \sqrt{11 + 6\sqrt{2}}$;

d) $D = \sqrt{(\sqrt{3} - 3)^2} \cdot \sqrt{\frac{1}{3 - \sqrt{3}}}$; e) $E = (5 + 4\sqrt{2})(3 + 2\sqrt{1 + \sqrt{2}})(3 - 2\sqrt{1 + \sqrt{2}})$;

f) $F = (3 - \sqrt{5})\sqrt{3 + \sqrt{5}} + (3 + \sqrt{5})\sqrt{3 - \sqrt{5}}$; g) $G = (2 - \sqrt{3})(\sqrt{6} + \sqrt{2})\sqrt{2 + \sqrt{3}}$;

h) $H = \sqrt{\sqrt{2} - 1} \cdot \sqrt{2 - \sqrt{3} - \sqrt{2}} \cdot \sqrt{2 + \sqrt{3} - \sqrt{2}}$; i) $I = \sqrt{5\sqrt{3} + 5\sqrt{48 - 10\sqrt{7 + 4\sqrt{3}}}}$;

k) $K = \frac{\sqrt{3} + \sqrt{11 + 6\sqrt{2}} - \sqrt{5 + 2\sqrt{6}}}{\sqrt{2} + \sqrt{6 + 2\sqrt{5}} - \sqrt{7 + 2\sqrt{10}}}$; l) $L = \sqrt{4 + \sqrt{10 + 2\sqrt{5}}} + \sqrt{4 - \sqrt{10 + 2\sqrt{5}}}$

m) $M = \frac{\sqrt{\sqrt{5} + 2} + \sqrt{\sqrt{5} - 2}}{\sqrt{\sqrt{5} + 1}} - \sqrt{3 - 2\sqrt{2}}$