FICHA Nº6

OP. CON RADICALES

PARA 3ºESO

Sumas y multiplicaciones

Responde a lápiz y haz las factorizaciones necesarias detrás de la hoja.

1) $3\sqrt{2}+5\sqrt{2}-7\sqrt{2}+4\sqrt{2}=$ $\boxed{5\sqrt{2}}$

2) $6\sqrt{2}-2\sqrt{2}+4\sqrt{2}-5\sqrt{3}=$

$=\boxed{8\sqrt{2}-5\sqrt{3}}$

3) $3\sqrt{2}-4\sqrt{8}+5\sqrt{50}-3\sqrt{32}=$

$3\sqrt{2}-4\sqrt{2^3}+5\sqrt{5^2\cdot 2}-3\sqrt{2^5}=$

$3\sqrt{2}-8\sqrt{2}+25\sqrt{2}-12\sqrt{2}=$

$+28\sqrt{2}-20\sqrt{2}=\boxed{8\sqrt{2}}$

4) $2\sqrt{2}-3\sqrt{3}+5\sqrt{3}-4\sqrt{3}=$

$=\boxed{2\sqrt{2}-2\sqrt{3}}$

5) $2\sqrt{5}+7\sqrt{5}-3\sqrt{5}+8\sqrt{5}=$ $\boxed{14\sqrt{5}}$

6) $4\sqrt{12}-3\sqrt{75}+6\sqrt{300}-\sqrt{108}=$

$4\sqrt{2^2\cdot 3}-3\sqrt{5^2\cdot 3}+6\sqrt{2^2\cdot 3\cdot 5^2}-\sqrt{2^2\cdot 3^3}=$

$8\sqrt{3}-15\sqrt{3}+60\sqrt{3}-6\sqrt{3}=$

$+68\sqrt{3}-21\sqrt{3}=\boxed{47\sqrt{3}}$

7) $2\sqrt{20}+4\sqrt{80}-5\sqrt{180}+6\sqrt{5}=$

$2\sqrt{2^2\cdot 5}+4\sqrt{2^4\cdot 5}-5\sqrt{2^2\cdot 3^2\cdot 5}+6\sqrt{5}=$

$4\sqrt{5}+16\sqrt{5}-30\sqrt{5}+6\sqrt{5}=$

$26\sqrt{5}-30\sqrt{5}=\boxed{-4\sqrt{5}}$

8) $\frac{1}{4}\sqrt{128}+6\sqrt{512}-\frac{1}{2}\sqrt{32}=$

$\frac{1}{4}\sqrt{2^7}+6\cdot\sqrt{2^9}-\frac{1}{2}\sqrt{2^5}=$

$\frac{1}{4}\cdot 2^3\sqrt{2}+6\cdot 2^4\cdot\sqrt{2}-\frac{1}{2}\cdot 2^2\sqrt{2}=$

$\frac{8}{4}\sqrt{2}+6\cdot 16\sqrt{2}-\frac{4}{2}\sqrt{2}=$

$2\sqrt{2}+96\sqrt{2}-2\sqrt{2}=\boxed{96\sqrt{2}}$

9) $\frac{4}{3}\sqrt{27}-\frac{1}{2}\sqrt{243}-\sqrt{75}-2\sqrt{48}=$

$\frac{4}{3}\sqrt{3^3}-\frac{1}{2}\sqrt{3^5}-\sqrt{3\cdot 5^2}-2\sqrt{2^4\cdot 3}$

$\frac{4\cdot 3}{3}\sqrt{3}-\frac{1}{2}\cdot 3^2\sqrt{3}-5\sqrt{3}-7\cdot 2^2\sqrt{3}=$

$4\sqrt{3}-\frac{9}{2}\sqrt{3}-5\sqrt{3}-8\sqrt{3}=-9\sqrt{3}-\frac{9}{2}\sqrt{3}=\left(-9-\frac{9}{2}\right)\sqrt{3}=$

$\frac{-18-9}{2}\cdot\sqrt{3}=\boxed{\frac{-27}{2}\sqrt{3}}$

10) $2\sqrt{45}-3\sqrt{80}-\sqrt{500}=$

$2\cdot\sqrt{3^2\cdot 5}-3\sqrt{2^4\cdot 5}-\sqrt{5\cdot 10^2}=$

$=2\cdot 3\sqrt{5}-3\cdot 2^2\cdot\sqrt{5}-10\sqrt{5}=$

$=6\sqrt{5}-12\sqrt{5}-10\sqrt{5}=\boxed{-16\sqrt{5}}$

11) $2\sqrt[3]{16}-4\sqrt[3]{54}+\sqrt[3]{128}=$

$2\sqrt[3]{2^4}-4\sqrt[3]{2\cdot 3^3}+\sqrt[3]{2^7}=$

$=2\cdot 2\cdot\sqrt[3]{2}-4\cdot 3\sqrt[3]{2}+2^2\sqrt[3]{3}=4\sqrt[3]{2}-12\sqrt[3]{2}+4\sqrt[3]{3}=$

$=\boxed{-4\sqrt[3]{2}}$

12) $2\sqrt{20}-\frac{1}{2}\sqrt{3}+6\sqrt{5}=$

$2\cdot\sqrt{2^2\cdot 5}-\frac{1}{2}\sqrt{3}+6\sqrt{5}=4\sqrt{5}-\frac{1}{2}\sqrt{3}+6\sqrt{5}=$

$\boxed{10\sqrt{5}-\frac{1}{2}\sqrt{3}}$

13) $2\sqrt[3]{2}+\sqrt[3]{3}=$ NO SE PUEDE SUMAR

14) $2\sqrt[3]{2}\cdot\sqrt[3]{3}=2\cdot\sqrt[3]{2\cdot 3}=\boxed{2\sqrt[3]{6}}$

15) $\sqrt{3}\cdot\sqrt{5}\cdot\sqrt{7}=\sqrt{3\cdot 5\cdot 7}=\boxed{\sqrt{105}}$

16) $(4\sqrt{3})\cdot(-\sqrt{5})=-4\cdot\sqrt{3\cdot 5}=\boxed{-4\sqrt{15}}$

17) $\sqrt{a}\cdot\sqrt{a}\cdot\sqrt{a\cdot b}=\sqrt{a\cdot a\cdot a\cdot b}=\sqrt{a^3 b}=\boxed{a\sqrt{ab}}$

18) $\frac{5}{4}\cdot\frac{\sqrt{3}}{\sqrt{2}}\cdot 6=\frac{5\cdot 6}{4}\cdot\sqrt{\frac{3}{2}}=\boxed{\frac{15}{2}\sqrt{\frac{3}{2}}}$

19) $\frac{\sqrt{3\cdot 7^2}}{\sqrt{6}}=\sqrt{\frac{3\cdot 7^2}{2\cdot 3}}=\sqrt{\frac{7^2}{2}}=\boxed{7\sqrt{\frac{1}{2}}}$