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$$\left(\frac{\frac{-\sqrt{2}-1}{\sqrt{2}+1}}{1-\sqrt{2}} - \frac{2}{\sqrt{2}+1} \right) \cdot \left(\frac{\sqrt{2}+3}{\sqrt{2}} - \sqrt{2} \right) : \frac{9+5\sqrt{2}}{8}$$

$$\frac{(-\sqrt{2}-1)(\sqrt{2}+1) - 2(\sqrt{2}-1)}{(\sqrt{2}-1)(\sqrt{2}+1)} \cdot \frac{\sqrt{2}+3 - \sqrt{2} \cdot \sqrt{2}}{\sqrt{2}} \cdot \frac{8}{9+5\sqrt{2}}$$

$$\frac{-\cancel{1} - \sqrt{2} - \sqrt{2} - 1 - 2\sqrt{2} + \cancel{2}}{1} \cdot \frac{\sqrt{2}+1}{\sqrt{2}} \cdot \frac{8}{9+5\sqrt{2}}$$

$$\frac{(-1-4\sqrt{2})(\sqrt{2}+1) \cdot 8}{\sqrt{2}(9+5\sqrt{2})} = \frac{(-\sqrt{2}-1-8-4\sqrt{2}) \cdot 8}{\sqrt{2}(9+5\sqrt{2})} =$$

$$- \frac{(-\cancel{9} - 5\sqrt{2}) \cdot 8}{\sqrt{2}(9+5\sqrt{2})} = - \frac{8}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = - \frac{8\sqrt{2}}{2} = -4\sqrt{2}$$

n 502

$$\frac{7}{5+2+2\sqrt{10}} \cdot \frac{10+1+2\sqrt{10}}{(3(\sqrt{5}+\sqrt{2})^2 - 2(\sqrt{10}+1)^2 + 1) : \sqrt{40}} + \frac{1}{\sqrt{5}-2} \cdot \frac{\sqrt{5}+2}{\sqrt{5}+2}$$

Oss: Con un po' di occhio si capisce se è meglio razionalizzare in corso d'opera.

↳ Tip: c'è solo un denominatore da razion. → ci provo.

- 1) Svolgo i conti
- 2) Razionalizzo con furbizie (Per non impazzire, posso farlo solo alla fine)

$$[\cancel{2} + 6\sqrt{10} - \cancel{2} - 4\sqrt{10} + \cancel{1}] : 2\sqrt{10} + \sqrt{5} + 2$$

$$\frac{1}{2\sqrt{10} : 2\sqrt{10}} + \sqrt{5} + 2 = \sqrt{5} + 2 + 1 = \sqrt{5} + 3$$

$$n 504: \left(\frac{5-2\sqrt{6}}{3} \cdot \frac{1}{\sqrt{3}+\sqrt{2}} \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}-\sqrt{2}} + \frac{\sqrt{128}}{3} \right)^2 + (\sqrt{6}+3)^2$$

$$\sqrt{18} = 3\sqrt{2}$$

$$\sqrt{12} = 2\sqrt{3}$$

$$\sqrt{128} = \sqrt{2^7} = 8\sqrt{2} = (\sqrt{64})\sqrt{2} =$$

$$\left(\frac{5\sqrt{3} - 5\sqrt{2} - 6\sqrt{2} + 4\sqrt{3}}{3} + \frac{8\sqrt{2}}{3} \right)^2 + 6 + 9 + 6\sqrt{6}$$

$$3(3\sqrt{3} - \sqrt{2})$$

$$\left(\frac{9\sqrt{3} - 3\sqrt{2}}{3} \right)^2 + 15 + 6\sqrt{6} = 24 + 2 - 6\sqrt{6} + 15 + 6\sqrt{6} = 44.$$

$$n 521: \sqrt{5}x = x + 8 \rightsquigarrow \sqrt{5}x - x = 8 \rightsquigarrow x(\sqrt{5} - 1) = 8$$

$$x = \frac{8}{\sqrt{5}-1} \cdot \frac{\sqrt{5}+1}{\sqrt{5}+1} = \frac{8\sqrt{5}+8}{4} = \frac{2\cancel{8}(\sqrt{5}+1)}{4} = 2\sqrt{5} + 2$$

$$n 525: 3x\sqrt{2} + 2 - \sqrt{2} = 2(\sqrt{2} - 2x)$$

$$3x\sqrt{2} + 2 - \sqrt{2} = 2\sqrt{2} - 4x$$

$$3x\sqrt{2} + 4x = 2\sqrt{2} - 2 + \sqrt{2}$$

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

$$x = \frac{3\sqrt{2}-2}{3\sqrt{2}+4} \cdot \frac{3\sqrt{2}-4}{3\sqrt{2}-4} = \frac{18 - 12\sqrt{2} - 6\sqrt{2} + 8}{18 - 16} = \frac{26 - 18\sqrt{2}}{2} = \frac{2(13 - 9\sqrt{2})}{2} = 13 - 9\sqrt{2}$$

$$\sqrt{3} = \sqrt{3^2 \cdot 3} = 3\sqrt{3}$$

$$n 538: (x - \sqrt{3})(x + \sqrt{3}) - x(x - \sqrt{12}) = \sqrt{12} - 3$$

$$\cancel{x^2} - \cancel{3} - \cancel{x^2} + 3\sqrt{3}x = 2\sqrt{3} - \cancel{3}$$

$$3\sqrt{3}x = 2\sqrt{3}$$

$$x = \frac{2\sqrt{3}}{3\sqrt{3}} = \frac{2}{3}$$

