

ce

$$\sqrt{27} = \sqrt{3^3} = \sqrt{3 \cdot 3^2} = 3\sqrt{3} \quad \sqrt{4^2} = 4 \quad \sqrt{200} = \sqrt{100 \cdot 2} = 10\sqrt{2}$$

$$\sqrt{2^4 \cdot 3^6} = \sqrt{2^4} \cdot \sqrt{3^6} = 2^2 \cdot 3^3 \quad \text{or } (a^b)^k = a^{k \cdot b}$$

$$\textcircled{6} \quad A = \frac{2}{\sqrt{5}} = \frac{2 \cdot \sqrt{5}}{\sqrt{5} \cdot \sqrt{5}} = \frac{2\sqrt{5}}{5} \quad B = \frac{2\sqrt{3}}{\sqrt{2}} = \frac{2\sqrt{3}\sqrt{2}}{2} = \sqrt{6}$$

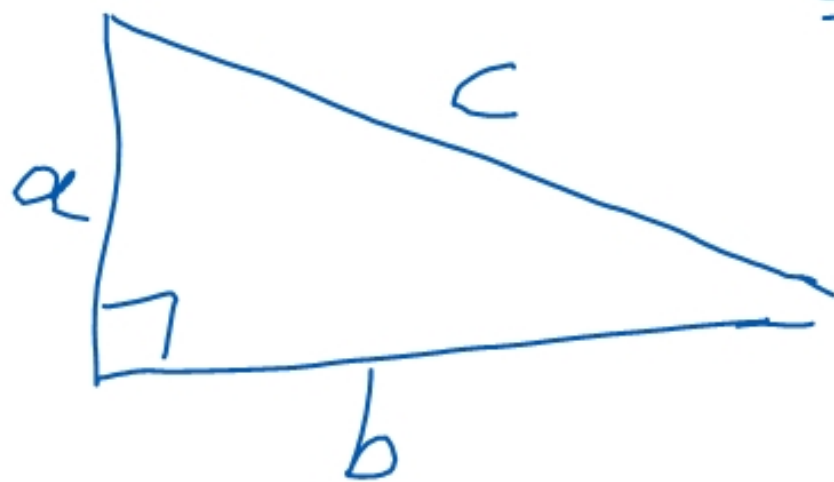
$$D = \frac{1}{1+\sqrt{2}} \cdot \frac{1-\sqrt{2}}{1-\sqrt{2}} = \frac{1-\sqrt{2}}{1-2} = \frac{1-\sqrt{2}}{-1} = \underline{\underline{\sqrt{2}-1}}$$

$(a+b)(a-b) = a^2 - b^2$

$$E = \frac{\sqrt{3}}{1-\sqrt{3}} \cdot \frac{1+\sqrt{3}}{1+\sqrt{3}} = \frac{\sqrt{3}+3}{1-3} = -\frac{\sqrt{3}+3}{2}$$

$$F = \frac{5+2\sqrt{2}}{\sqrt{3}-\sqrt{2}} \cdot \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}+\sqrt{2}} = \frac{5\sqrt{3}+5\sqrt{2}+2\sqrt{6}+2 \cdot 2}{3-2} = \underline{\underline{5\sqrt{3}+5\sqrt{2}+2\sqrt{6}+4}}$$

$$\begin{aligned}
 G &= \frac{6\sqrt{3}}{\sqrt{3}\sqrt{3}} + \frac{1(2-\sqrt{3})}{(2+\sqrt{3})(2-\sqrt{3})} + \frac{1(2+\sqrt{3})}{(2-\sqrt{3})(2+\sqrt{3})} = \frac{6\sqrt{3}}{3} + \frac{2-\sqrt{3}}{4-3} + \frac{2+\sqrt{3}}{4-3} \\
 &= 2\sqrt{3} + 2 - \sqrt{3} + 2 + \sqrt{3} \\
 &= \underline{4 + 2\sqrt{3}}
 \end{aligned}$$



$$a^2 + b^2 = c^2$$

$$AB^2 = 3 + 4\sqrt{6} + 8 = 11 + 4\sqrt{6} \approx 19^+$$

$$AC^2 = 18$$

$$AC^2 + BC^2 = 28 + 4\sqrt{6}$$

$$BC^2 = 4 + 4\sqrt{6} + 6 = 10 + 4\sqrt{6} < AB^2$$

$$\begin{aligned}
 \textcircled{3} \quad J &= \frac{3\sqrt{5} + \sqrt{20}}{\left(9 - \frac{5}{6} + \frac{4}{3}\right)\sqrt{45}} = \frac{3\sqrt{5} + 2\sqrt{5}}{\left(\frac{12-5+8}{6}\right)\sqrt{5 \cdot 9}} \\
 &= \frac{5\sqrt{5}}{\frac{15}{6} \cdot 3\sqrt{5}} = 5 \cdot \frac{6}{15} \cdot \frac{1}{3} = \frac{\cancel{5} \cdot 2 \cdot \cancel{3}}{3 \cdot \cancel{5} \cdot \cancel{3}} = \frac{2}{3}
 \end{aligned}$$

$$\frac{a}{\frac{b}{c}} = a \cdot \frac{c}{b}$$

VI Principes de calcul

61. Nettoyer

$$\text{ex: } \frac{2}{5} + \frac{3}{7} = \frac{14+15}{35} = \frac{29}{35}$$

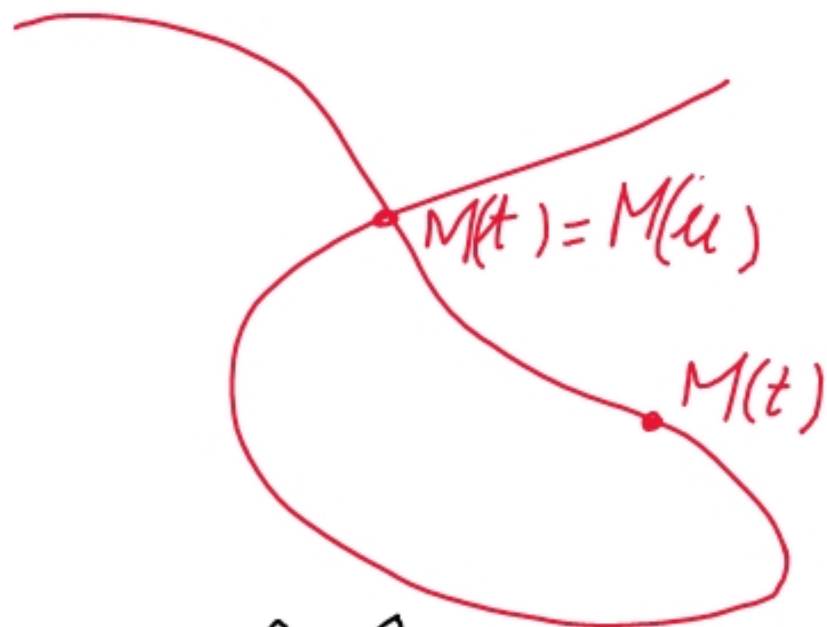
$$\frac{2}{5} + 3 = \frac{2+15}{5} = \frac{17}{5}$$

62. Qui se ressemble s'assemble

$$\begin{aligned} \underbrace{(n+1)!}_{-1} + \underbrace{(n+1)(n+1)!}_{-1} &= (n+1)! [1 + (n+1)] - 1 \\ &= \underbrace{(n+1)! (n+2)}_{-1} - 1 \\ &= (n+2)! - 1. \end{aligned}$$

$$\begin{cases} x(t) = \frac{t^3}{t^2-9} \\ y(t) = \frac{t(t-2)}{t-3} \end{cases}$$

$$\begin{cases} \frac{t^3}{t^2-9} = \frac{u^3}{u^2-9} \\ \frac{t(t-2)}{t-3} = \frac{u(u-2)}{u-3} \\ t \neq u \end{cases}$$



El point Kowen t
 et u ; on aura les
 les coord de pt
 double

$$\Leftrightarrow \begin{cases} t^3(u^2 - 9) = u^3(t^2 - 9) \\ t(t-2)(u-3) = u(u-2)(t-3) \\ (t^2-2t)(u-3) = (u^2-2u)(t-3) \end{cases} \quad u \neq t$$

$$\Leftrightarrow \begin{cases} t^3u^2 - 9t^3 = u^3t^2 - 9u^3 \\ t^2u - 3t^2 - 2tu + 6t = tu^2 - 3u^2 - 2tu + 6u \end{cases}$$

$$\Leftrightarrow \begin{cases} t^3u^2 - u^3t^2 = 9t^3 - 9u^3 \\ t^2u - tu^2 + 3(u^2 - t^2) = 6(u-t) \\ \underline{tu(t-u) + 3(u-t)(u+t) = 6(u-t)} \\ tu(t-u) + 3(u-t)(u+t) = 6(u-t) \end{cases}$$

$$\begin{cases} u^2t^2(t-u) = 9(t^3 - u^3) \end{cases}$$

On simplifie par $u-t$

éq 2: $-tue + 3(u+t) = 6$

j'ai l'impression que $t^3 - u^3 = (t-u) \cdot 9$ chose

éq 1: $u^2 t^2 (t-u) = 9(t-u)(t^2 + ut + u^2)$

le système initial est devenu

$$\left\{ \begin{array}{l} -tue + 3(u+t) = 6 \\ u^2 t^2 = 9(t^2 + ut + u^2) \end{array} \right.$$

au carré pour voir

$$t^2 u^2 = 9(u+t)^2 + 36 - 36(u+t)$$

$$9(t^2 + ut + u^2) = 9(u^2 + 2ut + t^2) + 36 - 36(u+t)$$

$$\Rightarrow \left. \begin{array}{l} tu = 2(u+t) - 2 \\ tu = 3(u+t) - 6 \end{array} \right\} \Rightarrow \begin{array}{l} 2(u+t) - 2 = 3(u+t) - 6 \\ 4 = u+t \end{array}$$

$$u = 4 - t \Rightarrow tu = t(4 - t)$$

$$tu = 3 \cdot 4 - 6 \quad tu = 6$$

$$\begin{array}{l} u = 4 - t \\ tu = 6 \end{array}$$

$$\begin{array}{l} (4 - t)t = 6 \Rightarrow 4t - t^2 = 6 \\ t^2 - 4t + 6 = 0 \quad \dots \end{array}$$

63 Identités remarquables

$$(a+b)^2 = a^2 + 2ab + b^2$$

$$(a-b)^2 = a^2 - 2ab + b^2$$

$$a^2 - b^2 = (a-b)(a+b)$$

$$(a+b)^3 = a^3 + 3a^2b + 3ab^2 + b^3$$

$$x^3 + 3x^2 + 3x + 1 = (x+1)^3$$

$$x^3 + 6x^2 + 12x + 8 = (x+2)^3$$

69. ATTENTION

- alors $\sqrt{\quad}$ Si on écrit \sqrt{a} , alors $a \geq 0$

$$\sqrt{a^2} \neq a$$

$$\sqrt{a^2} = |a|$$



/ a qd $a > 0$

\ -a qd $a \leq 0$

$$(\sqrt{a})^2 = a \quad \text{car ici } a \geq 0$$

- traits de fraction On ne divise pas par 0

- Simplification On ne simplifie pas par 0

Amigu

$$0.1 = 0.2 \Rightarrow 1 = 2 \quad \triangle$$

Exemple : Solutions de $\sqrt{x-4} + \sqrt{x+4} = 2$?

Il faut $x-4 \geq 0$ et $x+4 \geq 0$
 $x \geq 4$ et $x \geq -4$

Finalement $x \geq 4$

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

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

$$\implies \sqrt{x^2 - 16} = 2 - x \implies \cancel{x^2} - 16 = 4 - 4x + \cancel{x^2}$$

$$\implies 4x = 20 \implies x = 5 \quad \left| \begin{array}{l} \text{on vérifie} \\ \sqrt{5-4} + \sqrt{5+4} = \sqrt{1} + \sqrt{9} = 1+3 \\ = 4 \neq 2 \end{array} \right.$$

La seule solution possible est $x=5$, mais S ne marche pas, donc il n'y a pas de solutions

Moralité: Quand on résout un système d'éq, si on utilise des équivalences (\Leftrightarrow), pas de problème, mais si on utilise \Rightarrow , alors ~~il~~ FAUT VÉRIFIER!