$$|3+j\sqrt{7}| = \sqrt{9+7} = \sqrt{16} = 4.$$

$$\arg(\underbrace{-5}_{<0}+j\sqrt{24}) = \arctan\left(\frac{\sqrt{24}}{-5}\right) + \pi \simeq 2{,}37$$

$$-\pi \simeq -3{,}92$$

$$\arg(3-j\sqrt{7}) = \arctan\left(\frac{-\sqrt{7}}{3}\right) \simeq -0{,}72$$

$$\arg\left((1+j)\cdot(\sqrt{3}-j\sqrt{5})\right) = \arg(1+j) + \arg(\sqrt{3}-j\sqrt{5})$$

$$= \arctan(1) + \arctan\left(\frac{-\sqrt{5}}{\sqrt{3}}\right)$$

$$\simeq -0{,}13$$

$$\arg\left(\frac{-\sqrt{5}+j\sqrt{3}}{1+j}\right) = \arg\left(-\sqrt{5}+j\sqrt{3}\right) - \arg(1+j)$$

$$= \arctan\left(\frac{\sqrt{3}}{-\sqrt{5}}\right) + \pi - \arctan(1)$$

$$\simeq 1{,}70 \text{ ou} \ldots$$

$$\arg\left(x + \frac{j}{y}\right) = \arctan\left(\frac{\frac{1}{y}}{x} \times \frac{y}{y}\right) = \arctan\left(\frac{1}{xy}\right)$$

$$\arg\left(x + \frac{y}{j} \times \frac{j}{j}\right) = \arg\left(x - jy\right) = \arctan\left(-\frac{y}{x}\right)$$

$$= -\arctan\left(\frac{y}{x}\right)$$

$$\arg\left((1+jy)^{10}\cdot(1-jy)^{4}\right) = \arg\left(1+jy\right)^{10} + \arg\left((1-jy)^{4}\right)$$

$$= 10 \cdot \arctan(y) + 4\arctan(-y)$$

$$= 10 \cdot \arctan(y) - 4\arctan(y)$$

$$= 6\arctan(y)$$

$$\left|(1+j)(\sqrt{5}-j\sqrt{3})\right| = |1+j| \times |\sqrt{5}-j\sqrt{3}| = \sqrt{2} \cdot \sqrt{8} = \sqrt{16} = 4$$

$$\left|\frac{\sqrt{5}+j\sqrt{3}}{-1+j}\right| = \frac{\sqrt{8}}{\sqrt{2}} = \frac{\sqrt{4}\,\cancel{\sqrt{2}}}{\cancel{\sqrt{2}}} = 2.$$

$$x,y>0 \qquad \left|x+\frac{j}{y}\right| = \sqrt{\frac{x^2}{1}+\frac{1}{y^2}} = \sqrt{\frac{x^2y^2+1}{y^2}} = \frac{\sqrt{x^2y^2+1}}{\sqrt{y^2}}$$

$$= \frac{\sqrt{x^2y^2+1}}{y}$$

$$\left|x+\frac{y}{j}\times\frac{-j}{-j}\right| = \left|x-jy\right| = \sqrt{x^2+y^2}$$

$$|a+jb| = \sqrt{a^2+b^2}$$

$$\frac{1+j}{3+2j} \times \frac{3-2j}{3-2j} = \frac{5+j}{9-4j^2} = \frac{5+j}{9+4} = \frac{5+j}{13}$$

$(A+B) \times (A-B)$ $\qquad$ A^2-B^2

$$\underline{Z} = Z e^{j\theta} = Z(\cos\theta + j\sin\theta)$$

$$\underline{Z} = \underbrace{Z.\cos\theta}_{Re(\underline{Z})} + j\,\underbrace{Z.\sin\theta}_{Im(\underline{Z})}$$

$\underline{Z} = 3\sqrt{2}.e^{-3j\pi/4}$ ici $Z = 3\sqrt{2}$ et $\theta = -\frac{3\pi}{4}$

$$Im(\underline{Z}) = 3\sqrt{2}.\sin\left(\frac{-3\pi}{4}\right) = -\frac{3\sqrt{2}\sqrt{2}}{2} = -3$$

$$\left|(1+jy)^7\cdot(1-jy)^3\right| = |1+jy|^7 \times |1-jy|^3$$

$$= \sqrt{1+y^2}^{\,7}\times\sqrt{1+y^2}^{\,3}$$

$$= \sqrt{1+y^2}^{\,10}$$

$$= (1+y^2)^5.$$

$u \Rightarrow u' = \frac{1}{3}$

$$3\int \frac{1}{3}\cos\left(\overbrace{\frac{x}{3}+\frac{\pi}{4}}^{u}\right)dx = 3.\sin\left(\frac{x}{3}+\frac{\pi}{4}\right)+cte$$

$$\int u'\cdot\cos u\,dx = \sin u + cte$$