a) $\sin 2t = \tan t$

$$2\cancel{\sin t}\cos t = \frac{\cancel{\sin t}}{\cos t}$$

$$\underbrace{2t \neq 0 + k \cdot 2\pi}$$

$$2\cos^2 t = 1$$

$$\cos t = \pm \frac{1}{\sqrt{2}}$$

$$\boxed{\begin{aligned} t &= \pm \frac{\pi}{4} + k \cdot 2\pi \\ t &= \pm \frac{3\pi}{4} + k \cdot 2\pi \end{aligned}} \quad \begin{aligned} &\Leftrightarrow \cos t = \frac{1}{\sqrt{2}} \\ &\Leftrightarrow \cos t = -\frac{1}{\sqrt{2}} \end{aligned}$$

Équivalent à $t = \frac{\pi}{4} + k \cdot \frac{\pi}{2}$

$$t = 0 + k \cdot \pi$$

b) $\cos 2x + 2\sin x \cos x = 0$

$$\cos^2 x - \sin^2 x + 2\sin x \cos x = 0$$

$$1 - \tan^2 x + 2\tan x = 0$$

$$\tan^2 x - 2\tan x - 1 = 0$$

$$t^2 - 2t - 1 = 0$$

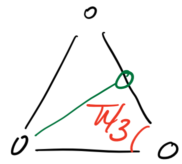
$$t = \frac{2 \pm \sqrt{4+4}}{2}$$

$$= 1 \pm \sqrt{2}$$

$$x = \arctan(1 \pm \sqrt{2}) + k \cdot \pi$$

$$x = \frac{3\pi}{8} + k \cdot \pi$$

c) $\boxed{\sin x \cdot \cos\left(2x+\frac{\pi}{3}\right) = \sin^2 x}$



$$\sin x \cdot \left(\cos 2x \cos\frac{\pi}{3} - \sin 2x \sin\frac{\pi}{3}\right) = \sin^2 x$$

$$\sin x \cdot \left(\cos 2x \cdot \frac{1}{2} - \sin 2x \, \frac{\sqrt{3}}{2}\right) = \sin^2 x$$

$$\sin x \neq 0 \not\Leftrightarrow x \neq \pm\frac{\pi}{2} + k\cdot 2\pi$$

$$\frac{1}{2}\cos 2x - \frac{\sqrt{3}}{2}\sin 2x = \sin x$$

Trop compliqué

$$\boxed{\cos\left(2x+\frac{\pi}{3}\right) = \sin x}$$

$$\sin\left(\frac{\pi}{2} - \left(2x+\frac{\pi}{3}\right)\right) = \sin x$$

$$\sin\left(\frac{\pi}{6} - 2x\right) = \sin x$$

$$x = \frac{\pi}{18} + k\cdot\frac{2\pi}{3}$$

$$x = -\frac{5\pi}{6} + k\cdot 2\pi$$

$$\frac{\pi}{6} - 2x = x + k\cdot 2\pi \quad \Big/ \quad \frac{\pi}{6} - 2x = \pi - x + k\cdot 2\pi$$

d) $1+\sin x = \cos 2x = \cos^2 x - \sin^2 x$

$1+\sin x = 1-\sin^2 x - \sin^2 x$

$2\sin^2 x + \sin x = 0$

$\sin x\,(2\sin x + 1) = 0$

$x = \pm \frac{\pi}{2} + k \cdot 2\pi$

$x = \arcsin\left(-\frac{1}{2}\right) + k \cdot 2\pi$

$x = \pi - \arcsin\left(-\frac{1}{2}\right) + k \cdot 2\pi$