MP 24/11/16

1) $\cos^2 x + 3\sin x + 3 = 0$

2) $\sin 2x = -\frac{1}{2}$

3) $\operatorname{tg} x + \operatorname{ctg} x = -1$

4) $\sin 2x = \operatorname{ctg} x$

5) $\frac{1}{\sin^2 x} + \operatorname{ctg} x - 1 = 0$

6) $\cos^2 x - \sin x + 1 = 0$

7) $\sin^2 x - \frac{3}{2}\sin x + \frac{1}{2} = 0$

8) $\cos^2 x + \cos 2x + 1 = 0$

9) $|\cos x| = 2 - \cos^2 x$

10) $\left|\cos\left(x + \frac{\pi}{2}\right)\right| = \frac{1}{2}$

11) $|3\cos x| = 2 + \sin^2 x$

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1) $\cos^2 x + 3\sin x + 3 = 0$

$1 - \sin^2 x + 3\sin x + 3 = 0$

$+\sin^2 x - 3\sin x - 4 = 0$

S: $a = \sin x$

$a^2 - 3a - 4 = 0$

$a_1 = 4$

$a_2 = -1 \Rightarrow a = -1 \quad \sin x = -1$

$$\boxed{x = \frac{3\pi}{2} + k\,2\pi}$$

6) $\cos^2 x - \sin x + 1 = 0$

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

S: $a = \sin x$

$a^2 + a - 2 = 0$

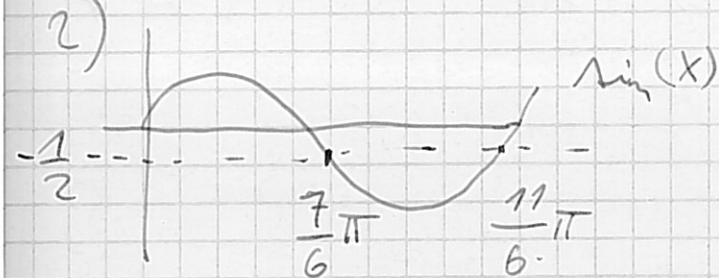
$a_1 = -2$

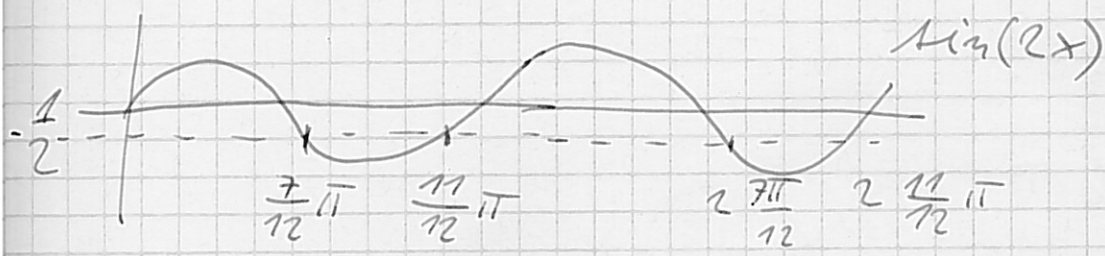
$a_2 = 1 \Rightarrow a = 1$

$\sin(1) = \frac{\pi}{2}$

$$\boxed{x = \frac{\pi}{2} + 2k\pi}$$

2)





~~$x = \frac{7}{12}\pi \quad \frac{11}{12}\pi$~~

$x = \left\{ \frac{7}{12}\pi + k\pi \; ; \; \frac{11}{12}\pi + k\pi \right\}$

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8) $\cos^2 x + \cos 2x + 1 = 0$

$\cos^2 x + \cos^2 x - \sin^2 x + 1 = 0$

$2(1 - \sin^2 x) - \sin^2 x + 1 = 0$

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

$3 - 3\sin^2 x = 0$

$$x_1 = \frac{\pi}{2} + 2k\pi$$
$$x_2 = \frac{3\pi}{2} + 2k\pi$$

$\sin x^2 = 1$

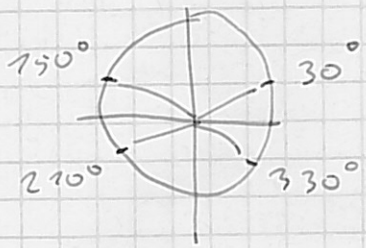
$\sin x_1 = 1$

$\sin x_2 = -1$

10) $\left|\cos\left(x + \frac{\pi}{2}\right)\right| = \frac{1}{2}$

$|-\sin x| = \frac{1}{2}$

$$x_1 = \frac{\pi}{6} \cdot k\pi$$
$$x_2 = \frac{\pi}{6} \cdot k\pi$$



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11) $|3 - \cos x| = 3 - \cos^2 x$ (ABSOLUTNÍ HODNOTA BUDE VŽDY KLADNÁ)

$3 - \cos x = 3 - \cos^2 x$

$\cos x = \cos^2 x$

$x_1 = 0 + k2\pi$

$x_2 = \frac{\pi}{2} + k\pi$

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12) $5^{x-1} \cdot 25^{x-3} = 125^{-2x-1}$

13) $8 \cdot 3^{\sqrt{x+1}} - 9^{\sqrt{x+1}} = -9$

16) $\log_4 x - \log_4 (2-x) = 1$