

2214

(a) $\sin 2x = 0,5$ ← tex från tabell

$2x = \frac{\pi}{6} + n \cdot 2\pi$ eller $2x = \pi - \frac{\pi}{6} + n \cdot 2\pi$

← $\arcsin 0,5 = \frac{\pi}{6}$

$x = \frac{\pi}{12} + n\pi$ eller $2x = \frac{5\pi}{6} + n \cdot 2\pi$

$\pi - \frac{\pi}{6} = \frac{6\pi}{6} - \frac{\pi}{6} = \frac{5\pi}{6}$

$x = \frac{5\pi}{12} + n \cdot \pi$

Svar: $x = \frac{\pi}{12} + n\pi$ eller $x = \frac{5\pi}{12} + n\pi$

(b) $\tan 2x = 1$

$2x = \frac{\pi}{4} + n \cdot \pi$

← $\arctan 1 = 45^\circ = \frac{\pi}{4}$

← \tan har perioden π !

$x = \frac{\pi}{8} + n \cdot \frac{\pi}{2}$

Svar: $x = \frac{\pi}{8} + n \cdot \frac{\pi}{2}$

(c) $\cos\left(x - \frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}$

← $\arccos \frac{\sqrt{2}}{2} = \frac{\pi}{4}$

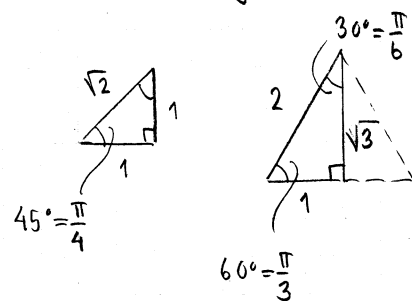
$x - \frac{\pi}{4} = \pm \frac{\pi}{4} + n \cdot 2\pi$

Fall 1

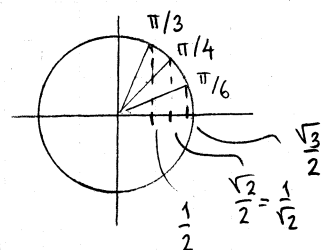
$x - \frac{\pi}{4} = \frac{\pi}{4} + n \cdot 2\pi$

$x = \frac{\pi}{4} + \frac{\pi}{4} + n \cdot 2\pi$

Har man inte tillgång till tabell kan arcsin, arccos och arctan-värden bestämmas mha de två "bra triangelarna":



Eller med enhetscirkeln:



2214

(forts)

$$x = \frac{\pi}{2} + n \cdot 2\pi$$

Fall 2

$$x - \frac{\pi}{4} = -\frac{\pi}{4} + n \cdot 2\pi$$

$$x = -\frac{\pi}{4} + \frac{\pi}{4} + n \cdot 2\pi$$

$$x = 0 + n \cdot 2\pi$$

Svar: $x = \frac{\pi}{2} + n \cdot 2\pi$ eller $x = n \cdot 2\pi$

(d) $\tan\left(x + \frac{\pi}{6}\right) = \sqrt{3}$

$$x + \frac{\pi}{6} = \frac{\pi}{3} + n \cdot \pi$$

$$x = \frac{\pi}{3} - \frac{\pi}{6} + n \cdot \pi$$

$$x = \frac{\pi}{6} + n \cdot \pi$$

$$\frac{\pi}{3} - \frac{\pi}{6} = \frac{2\pi}{6} - \frac{\pi}{6} = \frac{\pi}{6}$$

Svar: $x = \frac{\pi}{6} + n \cdot \pi$
