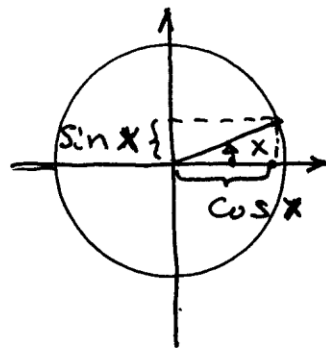
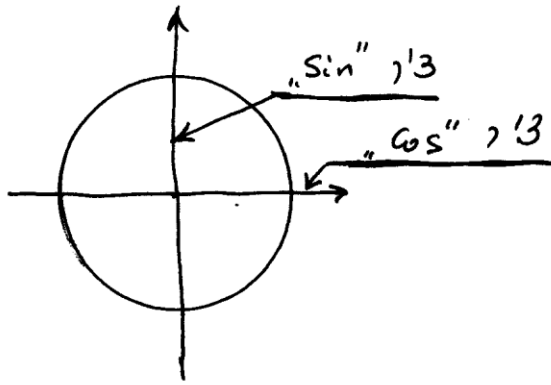


פתור את המשוואות טריגונומטריות:

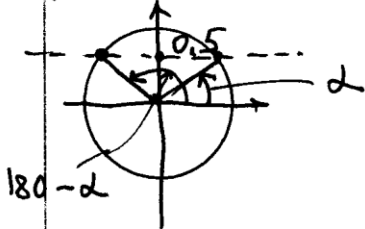
$\sin x = \sin 50^\circ$.2	$\sin x = 0.5$.1
$\sin 2x = \frac{\sqrt{3}}{2}$.4	$\sin x = -\frac{\sqrt{2}}{2}$.3
$5\sin x = 3$.6	$\sin 3x = \sin 72^\circ$.5
$4\sin(3x - 15^\circ) = -\sqrt{12}$.8	$4\sin(2x + 10^\circ) = 3$.7
$\sin\left(\frac{x}{3} - 20^\circ\right) = \sin 100^\circ$.10	$\sin \frac{x}{2} = \sin 40^\circ$.9
$\sin(60^\circ - 3x) = -\sin 48^\circ$.12	$\sin(70^\circ - x) = -\frac{\sqrt{2}}{2}$.11
$\sin 2x = 0$.14	$\sin\left(110^\circ - \frac{x}{2}\right) = -\sin 70^\circ$.13
$\sin(2x + 50^\circ) = 1$.16	$\sin(4x - 40^\circ) = 0$.15
$\cos x = \frac{\sqrt{3}}{2}$.18	$\sin\left(3x - \frac{\pi}{3}\right) = -1$.17
$\cos(4x - 15^\circ) = 0.7$.20	$\cos(2x + 10^\circ) = -\frac{\sqrt{2}}{2}$.19
$\cos(40^\circ - 2x) = -\cos 20^\circ$.22	$\cos\left(\frac{x}{2} - 20^\circ\right) = \cos 110^\circ$.21
$\cos\left(2x - \frac{\pi}{3}\right) = 1$.24	$\cos 3x = 0$.23
$\tan x = \sqrt{3}$.26	$\cos\left(70^\circ - \frac{x}{2}\right) = -1$.25
$\tan(2x + 10^\circ) = \tan 22^\circ$.28	$\tan 3x = -1$.27

תשובות:

$.130^\circ + 360^\circ k$, $.50^\circ + 360^\circ k$.2	$.150^\circ + 360^\circ k$, $.30^\circ + 360^\circ k$.1
$.60^\circ + 180^\circ k$, $.30^\circ + 180^\circ k$.4	$.225^\circ + 360^\circ k$, $-.45^\circ + 360^\circ k$.3
$.143.13^\circ + 360^\circ k$, $.36.87^\circ + 360^\circ k$.6	$.36^\circ + 120^\circ k$, $.24^\circ + 120^\circ k$.5
$.85^\circ + 120^\circ k$, $-.15^\circ + 120^\circ k$.8	$.60.70^\circ + 180^\circ k$, $.19.30^\circ + 180^\circ k$.7
$.300^\circ + 1080^\circ k$, $.360^\circ + 1080^\circ k$.10	$.280^\circ + 720^\circ k$, $.80^\circ + 720^\circ k$.9
$-.56^\circ + 120^\circ k$, $.36^\circ + 120^\circ k$.12	$-.155^\circ + 360^\circ k$, $.115^\circ + 360^\circ k$.11
$.10^\circ + 45^\circ k$.15	$.90^\circ k$.14
$.360^\circ + 720^\circ k$, $-.280^\circ + 720^\circ k$.13	
$-.30^\circ + 360^\circ k$, $.30^\circ + 360^\circ k$.18	$-\frac{\pi}{18} + \frac{2\pi}{3}k$.17
$-.7.64^\circ + 90^\circ k$, $.15.14^\circ + 90^\circ k$.20	$.20^\circ + 180^\circ k$.16
$.100^\circ + 180^\circ k$, $-.60^\circ + 180^\circ k$.22	$.62.5^\circ + 180^\circ k$, $-.72.5^\circ + 180^\circ k$.19
$.60^\circ + 180^\circ k$.26	$-.180^\circ + 720^\circ k$, $.260^\circ + 720^\circ k$.21
$-.220^\circ + 720^\circ k$.25	$-\frac{\pi}{6} + \pi k$.24
	$.30^\circ + 60^\circ k$.23
	$.6^\circ + 90^\circ k$.28
	$-.15^\circ + 60^\circ k$.27



4) $\sin x = 0.5$



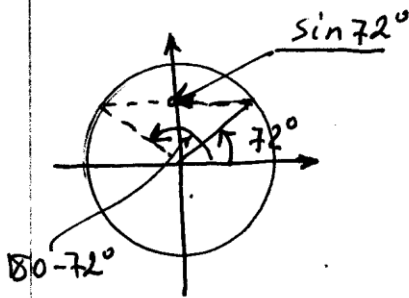
$$\alpha = \boxed{\text{Shift}} \boxed{\text{Sin}} 0.5 \boxed{=} 30^\circ$$

$$\alpha = 30^\circ, \quad 180^\circ - \alpha = 150^\circ$$

$$\begin{cases} x = 30^\circ + 360^\circ k \\ x = 150^\circ + 360^\circ k \end{cases} \quad \text{! alle}$$

$$k = 0, \pm 1, \pm 2, \dots$$

5) $\sin 3x = \sin 72^\circ$



$$\begin{cases} x = 72^\circ + 360^\circ k \\ x = (180^\circ - 72^\circ) + 360^\circ k \end{cases}$$

$$k = 0, \pm 1, \pm 2, \dots$$

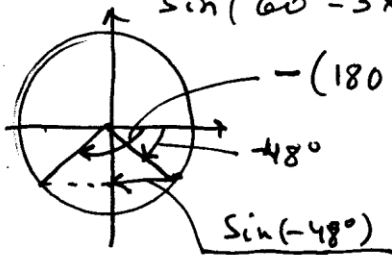
12) $\sin(60^\circ - 3x) = -\sin 48^\circ$

$$\sin(-x) = -\sin x$$

$$\Leftarrow \text{1815 1/2 Sin x 75 1/2}$$

$$\sin(60^\circ - 3x) = \sin(-48^\circ)$$

$$! \text{ } \alpha \text{ } \delta$$



$$60^\circ - 3x = -48^\circ + 360^\circ k$$

$$-3x = -108 + 360^\circ k \quad /: (-3)$$

$$x = 36^\circ + 120^\circ k$$

$$60 - 3x = -132 + 360^\circ k$$

$$x = 64^\circ + 120^\circ k$$

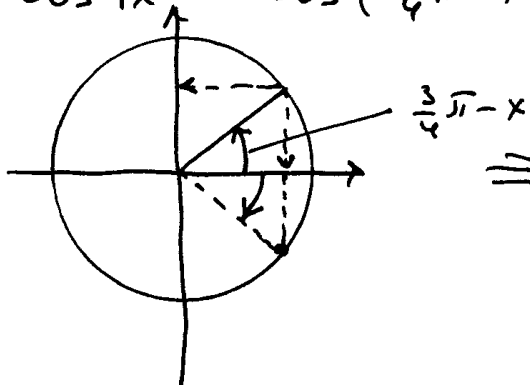
$$k = 0, \pm 1, \pm 2, \dots$$

$$*) \cos 4x = -\sin\left(\frac{\pi}{4} - x\right)$$

⇓

$$\cos 4x = \sin\left(x - \frac{\pi}{4}\right) ; \quad \sin\left(x - \frac{\pi}{4}\right) =$$

$$\Rightarrow \cos 4x = \cos\left(\frac{3}{4}\pi - x\right) = \cos\left(\frac{\pi}{2} - \left(x - \frac{\pi}{4}\right)\right)$$



$$\Rightarrow 4x = \pm\left(\frac{3}{4}\pi - x\right) + 2\pi k$$

$$4x = \frac{3}{4}\pi - x + 2\pi k$$

$$5x = \frac{3}{4}\pi - 2\pi k$$

$$x = \frac{3\pi}{20} - \frac{2\pi k}{5}$$

$$4x = -\frac{3}{4}\pi + x + 2\pi k$$

$$3x = -\frac{3}{4}\pi + 2\pi k$$

$$x = -\frac{\pi}{4} + \frac{2\pi k}{3}$$

∴ ∪ ∪ ∪ ∪ ∪

$$\left[\begin{array}{l} x = \frac{3}{20}\pi - \frac{2}{5}\pi k \\ x = -\frac{\pi}{4} + \frac{2}{3}\pi k \end{array} \right.$$

$$k = 0, \pm 1, \pm 2, \dots$$

$$28) \tan(2x + 10^\circ) = \tan 22^\circ$$

$$2x + 10^\circ = 22^\circ + 180^\circ k$$

$$2x = 12^\circ + 180^\circ k$$

$$x = 6^\circ + 90^\circ k$$