

Ex. 5,2 p.252 # 1, 3, 5, 11, 15, 18, 21, 27, 29, 30, 32, 34

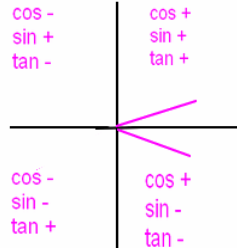
Isole θ dans chaque équation, $0 \leq \theta \leq 2\pi$.

1. $\cos \theta - 0,5 = 0$

$$\cos \theta = 0,5$$

$$\theta = \frac{\pi}{3}, \frac{5\pi}{3}$$

$$\theta = 60^\circ, 300^\circ$$

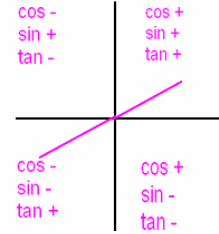


3. $2 \tan \theta - 2 = 0$

$$\tan \theta = \frac{2}{2} = 1$$

$$\theta = \frac{\pi}{4}, \frac{5\pi}{4}$$

$$\theta = 45^\circ, 225^\circ$$



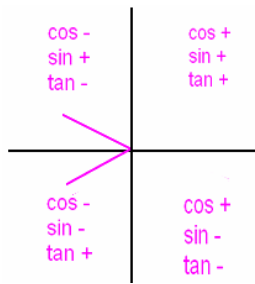
5. $4 \cos \theta + 2 = 0$

$$4 \cos \theta = -2$$

$$\cos \theta = \frac{-1}{2}$$

$$\theta = \frac{2\pi}{3}, \frac{4\pi}{3}$$

$$\theta = 120^\circ, 240^\circ$$



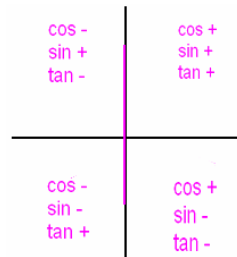
Isole x dans chaque équation, $0 \leq \theta \leq 360^\circ$.

11. $\cos 2x = 0$

$$2x = 90^\circ + 180^\circ n$$

$$x = 45^\circ + 90^\circ n$$

$$x = 45^\circ, 135^\circ, 225^\circ, 315^\circ$$



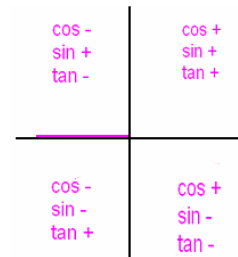
15. $\cos 2x + 1 = 0$

$$\cos 2x = -1$$

$$2x = 180^\circ + 360^\circ n$$

$$x = 90^\circ + 180^\circ n$$

$$x = 90^\circ, 270^\circ$$



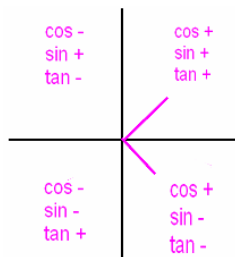
18. $2 \cos \frac{1}{2} x = 1$

$$\cos \frac{1}{2} x = \frac{1}{2}$$

$$\frac{1}{2} x = 60^\circ + 360^\circ n, 300^\circ + 360^\circ n$$

$$x = 120^\circ + 720^\circ n, 600^\circ + 720^\circ n$$

$$x = 120^\circ$$



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Isole x dans chaque équation, $0 \leq \theta \leq 2\pi$. Indique ensuite une solution générale.

21. $\cos^2 x = 1$

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

$$(\cos x - 1)(\cos x + 1) = 0$$

$$\cos x = 1 \quad \cos x = -1$$

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

$$x = n\pi$$

ou

$$x = 0^\circ + 360^\circ n \quad x = 180^\circ + 360^\circ n$$

$$x = 180^\circ n$$

27. $2 \sin^2 x + \sin x = 1$

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

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

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

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

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

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

$$x = \frac{\pi}{6} + 2n\pi, \frac{5\pi}{6} + 2n\pi, \frac{3\pi}{2} + 2n\pi \text{ ou } 30^\circ + 360^\circ n, 330^\circ + 360^\circ n, 270^\circ$$

$$x = \frac{\pi}{6}, \frac{5\pi}{6}, \frac{3\pi}{2} \quad \text{ou} \quad 30^\circ, 270^\circ, 330^\circ$$

29. $\cos^2 2x + \cos 2x = 0$

$$\cos 2x (\cos 2x + 1) = 0$$

$$\cos 2x = 0 \quad \cos 2x = -1$$

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

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

$$x = \frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}, \frac{\pi}{2}, \frac{3\pi}{2}$$

ou

$$2x = 90^\circ + 180^\circ n, 180^\circ + 360^\circ n$$

$$x = 45^\circ + 90^\circ n, 90^\circ + 180^\circ n$$

$$x = 45^\circ, 90^\circ, 135^\circ, 225^\circ, 270^\circ, 315^\circ$$

30. $4 \sin^2 x + 2 \sin x - 2 = 0$

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

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

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

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

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

$$x = \frac{\pi}{6} + 2n\pi, \frac{5\pi}{6} + 2n\pi, \frac{3\pi}{2} + 2n\pi$$

$$x = \frac{\pi}{6}, \frac{5\pi}{6}, \frac{3\pi}{2}$$

ou

$$x = 30^\circ + 360^\circ n, 150^\circ + 360^\circ n, 270^\circ + 360^\circ n$$

$$x = 30^\circ, 150^\circ, 270^\circ$$

32. Détermine toutes les racines exactes de chaque équation.

a) $\cos x - 2 \sin x \cos x = 0$

$$\cos x (1 - 2 \sin x) = 0$$

$$\cos x = 0 \quad -2 \sin x = -1$$

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

$$x = \frac{\pi}{2}, \frac{3\pi}{2} \quad x = \frac{\pi}{6}, \frac{5\pi}{6}$$

$$x = \frac{\pi}{2} + n\pi, \frac{\pi}{6} + 2n\pi, \frac{5\pi}{6} + 2n\pi$$

$$x = 90^\circ + 180^\circ n, 30^\circ + 360^\circ n, 150^\circ + 360^\circ n$$

$$x = 30^\circ, 90^\circ, 150^\circ, 270^\circ$$

b) $4 \sin^2 x + 3 = 0$

$$\sin^2 x = \frac{-3}{4}$$

$$\sin x = \sqrt{\frac{-3}{4}} \text{ impossible}$$

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c) $2 \cos^2 x - 5 \cos x + 2 = 0$

$$2 \cos^2 x - 4 \cos x - \cos x + 2 = 0$$

$$2 \cos x (\cos x - 2) - (\cos x - 2) = 0$$

$$(2 \cos x - 1)(\cos x - 2) = 0$$

$$\cos x = \frac{1}{2} \quad \cos x = 2$$

$$x = \frac{\pi}{3}, \frac{5\pi}{3} \quad \text{pas possible}$$

$$x = \frac{\pi}{3} + 2n\pi, \frac{5\pi}{3} + 2n\pi$$

$$x = 60^\circ + 360^\circ n, 300^\circ + 360^\circ n$$

$$x = 60^\circ, 300^\circ$$

34. Résous chaque équation si $0 \leq \theta \leq 2\pi$. Arrondis tes réponses au dixième.

a) $4 \cos^2 x = \cos x$

$$4 \cos^2 x - \cos x = 0$$

$$\cos x (4 \cos x - 1) = 0$$

$$\cos x = 0 \quad \cos x = \frac{1}{4}$$

$$x = 1,6; 4,7 \quad x = 1,3; 5,0$$

ou

$$x = 90^\circ, 270^\circ, 75,5^\circ, 284,5^\circ$$

b) $\sec x \sin x = 2 \sin x$

$$\sec x \sin x - 2 \sin x = 0$$

$$\sin x (\sec x - 2) = 0$$

$$\sin x = 0 \quad \frac{1}{\cos x} = 2$$

$$x = 0; 3,1 \quad \cos x = \frac{1}{2}$$

$$x = 1; 5,3$$

ou

$$x = 0^\circ, 360^\circ, 60^\circ, 300^\circ$$

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

$$\sin x = \frac{-1 \pm \sqrt{1 - 4(1)(-1)}}{2}$$

$$\sin x = \frac{-1 \pm \sqrt{5}}{2}$$

$$\sin x = 0,6180 \quad \sin x = -1,6180$$

$$x = 0,7; 2,5 \quad \text{impossible}$$

ou

$$x = 38,2^\circ; 141,9^\circ$$