

Trigonometrie – 4 –	
	Demonstrați identitățile:
1.	$(\cos x - \sin x)^2 + (\cos x + \sin x)^2 = 2, \forall x \in \mathbb{R}$
2.	$\frac{\sin 2x}{1 + \cos 2x} = \frac{1 - \cos 2x}{\sin 2x}$
3.	$\sin(\pi - x)\sin x - \cos(\pi - x)\cos x = 1, \forall x \in \mathbb{R}$
4.	$\frac{\sin 2x}{1 + \cos 2x} = \operatorname{tg} x$
5.	$(\cos x + \cos(2\pi - x))^2 + (\sin x + \sin(\pi - x))^2 = 4, \forall x \in \mathbb{R}$
6.	$\frac{\sin x - \cos x}{\sin x + \cos x} = \frac{\operatorname{tg} x - 1}{\operatorname{tg} x + 1}$
7.	$\frac{1 + \sin 2x + \cos 2x}{1 + \sin 2x - \cos 2x} = \operatorname{ctg} x$
8.	$\left(3\sin\left(\frac{\pi}{2} - a\right) + \cos a\right)^2 + \left(\sin a + 3\cos\left(\frac{\pi}{2} - a\right)\right)^2 = 16, \forall a \in \mathbb{R}$
9.	$\frac{1 - \sin^2 x}{1 - \cos^2 x} = \frac{1}{\operatorname{tg}^2 x}$
10.	$\frac{1 - 2\sin^2 x}{1 + \sin 2x} = \frac{1 - \operatorname{tg} x}{1 + \operatorname{tg} x}$
11.	$2(\sin^6 a + \cos^6 a) - 3(\sin^4 a + \cos^4 a) = -1, \forall a \in \mathbb{R}$
12.	$\frac{\sin^2(a + b) + \sin^2(a - b)}{2\cos^2 a \cos^2 b} = \operatorname{tg}^2 a + \operatorname{tg}^2 b$
13.	$(\sin 2x + \sin 4x)^2 + (\cos 2x + \cos 4x)^2 = 4\cos^2 x, \forall x \in \mathbb{R}$
14.	$\frac{\sin(x + y)}{\sin(x - y)} = \frac{\operatorname{tg} x + \operatorname{tg} y}{\operatorname{tg} x - \operatorname{tg} y}$
15.	$(1 + \operatorname{tg}^2 x)\cos^2 x - (1 + \operatorname{ctg}^2 x)\sin^2 x = 0, \forall x \in \left(0, \frac{\pi}{2}\right)$