

Taak gon formules I

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Hasselt

Datum:

Klas:

Naam:.....

Toets WISKUNDE

leerkracht: Karel Appeltans

schooljaar 20...-20...

Studierichting:

Aantal uren wiskunde: 6

Bewijs de volgende gon identiteiten

1	$\sin \alpha + \cot \alpha \cdot \cos \alpha = \operatorname{cosec} \alpha$
2	$\sin \alpha \cdot (1 + \tan \alpha) + \cos \alpha \cdot (1 + \cot \alpha) = \sec \alpha + \operatorname{cosec} \alpha$
3	$\frac{1 + \tan^2 \alpha}{1 + \cot^2 \alpha} = \frac{1 - \cos^2 \alpha}{1 - \sin^2 \alpha}$
4	$\sin \alpha - \sin^3 \alpha = \sin \alpha \cdot \cos^2 \alpha$
5	$\cos^4 \alpha - \sin^4 \alpha = 1 - 2 \sin^2 \alpha$
6	$\frac{1}{\cos^2 \alpha} - \tan^2 \alpha = \frac{1}{\sin^2 \alpha} - \cot^2 \alpha$
7	$\frac{\tan \alpha}{\sin \alpha} + \frac{\cot \alpha}{\cos \alpha} = \frac{\sin \alpha + \cos \alpha}{\sin \alpha \cdot \cos \alpha}$
8	$\sin^2 \alpha + \sin^2 \alpha \cdot \tan^2 \alpha = \tan^2 \alpha$
9	$\frac{1}{\tan \alpha} + \frac{1}{\cot \alpha} = \tan \alpha + \cot \alpha$
10	$(\operatorname{cosec} \alpha + \cot \alpha) \cdot (1 - \cos \alpha) = \sin \alpha$
11	$(\sec \alpha + \tan \alpha) \cdot (1 - \sin \alpha) = \cos \alpha$
12	$(\sec \alpha - \cos \alpha) \cdot \cot \alpha = (\operatorname{cosec} \alpha - \sin \alpha) \cdot \tan^2 \alpha$
13	$\cos^2 \alpha + \cos^2 \alpha \cdot \tan^2 \alpha = 1$

14		(i) $\frac{\cos \theta}{1 - \tan \theta} + \frac{\sin \theta}{1 - \cot \theta} = \sin \theta + \cos \theta;$
15		(ii) $\frac{\sin \theta}{1 + \cos \theta} + \frac{1 + \cos \theta}{\sin \theta} = 2 \csc \theta;$
16		(iii) $(1 - \sin \theta + \cos \theta)^2 = 2(1 - \sin \theta)(1 + \cos \theta);$
17		(iv) $\cos \theta \cdot \csc \theta + \sin \theta \cdot \sec \theta = \sec \theta \cdot \csc \theta;$
18		(v) $\sec \theta \cdot \csc \theta = \tan \theta + \cot \theta.$
19		Show that the expression $\frac{\sec \theta}{\sec \theta - 1} + \frac{\sec \theta}{\sec \theta + 1}$ can be written as $2 \operatorname{cosec}^2 \theta$. [3]
20		$\frac{\sin^3(-x)}{\sin^3(x) - \sin(x)} = \tan^2 x$
21		$\frac{\tan^3(x) - \sec^2(x) \tan(x)}{\cot(-x)} = \tan^2 x$
22		$\tan x(\cos x + \cot x)(1 - \sin x) = \cos^2 x$
23		$\frac{(\sec x + \tan x)(\sec x - \tan x)}{\csc x} = \sin x$
24		$\frac{(1 - \sin \alpha)(1 + \sin \alpha)}{(\sec \alpha + 1)(\sec \alpha - 1)} = \cos^2 \alpha \cot^2 \alpha$
25		$\frac{\tan x}{1 + \cos x} + \frac{\sin x}{1 - \cos x} = \cot x + \sec x \cdot \operatorname{cosec} x$
26		$\frac{(1 + \sin \theta)(\csc \theta - 1)}{\cot^2 \theta} = \sin(x)$
27		$(\sec \alpha - \tan \alpha)^2 = \frac{1 - \sin \alpha}{1 + \cos \alpha}$

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Prove that $\frac{\tan \theta + \sec \theta - 1}{\tan \theta - \sec \theta + 1} = \tan \theta + \sec \theta$