MONYETLA PROJECT SUMMER CAMP DEC 2020 MATHEMATICS TRIGONOMETRY GRADE 11 EXAM-TYPE QUESTION ANSWERS

QUESTION/VRAAG 5

5.1.1	$\cos 203^{\circ} = -\cos 23^{\circ}$	✓ reduction/herlei
3.1.1		✓ answer/antw
	=-p	(2)
5.1.2	$\sin 293^\circ = -\sin 67^\circ$	✓ reduction/herlei
	$=-\cos 23^{\circ}$	✓ co-ratio/ko-verh
	=-p	✓ answ/antw ito/v p
		$\begin{array}{ c c c c c c c c c c c c c c c c c c c$
5.2	$\sin(360^{\circ} - x).\tan(-x)$	
	$\frac{\cos(180^{\circ} + x).(\sin^2 A + \cos^2 A)}{\cos(180^{\circ} + x).(\sin^2 A + \cos^2 A)}$	
	$=\frac{(-\sin x)(-\tan x)}{}$	$\sqrt{-\sin x}$
	$=\frac{1}{(-\cos x)(1)}$	$\sqrt{-\tan x}$
		$\sqrt{-\cos x}$
	$(-\sin x)\left(-\frac{\sin x}{\cos x}\right)$	✓ 1
	$=\frac{\cos x}{\cos x}$	$(\sin x)$
	$-\cos x$	$\checkmark \left(-\frac{\sin x}{\cos x}\right)$
	$=-\frac{\sin^2 x}{x}$	
	$\cos^2 x$	2
	$=-\tan^2 x$	$\sqrt{-\tan^2 x}$
		(6)
5.3.1	$LHS = \frac{\cos^2 x + (1 + \sin x)^2}{(1 + \sin x)^2}$	✓ numerator/teller
	$\frac{1+\sin x)\cdot\cos x}{(1+\sin x)\cos x}$	✓ denominator/
	$\cos^2 x + 1 + 2\sin x + \sin^2 x$	noemer
	=	✓ multiplication/
	$(1+\sin x).\cos x$	vermenigvuldiging
	$=\frac{1+1+2\sin x}{}$	✓ identity/identiteit
	$(1+\sin x).\cos x$	✓ fact/faktor
	$\frac{2(1+\sin x)}{}$	numerator/ <i>teller</i>
	$-(1+\sin x).\cos x$	
	_ 2	
	$={\cos x}$	(5)
	= RHS	(5)
5.3.2	Undefined if/ongedefinieerd as:	
	$\sin x = -1 \text{or} \cos x = 0$	✓ 90°
	$\therefore x = 90^{\circ} ; 270^{\circ}$	✓ 270°
		(2)

5.5.1		
	$x^2 + y^2 = r^2$	
	$x^2 + (\sqrt{3})^2 = 2^2$	✓ subst
	$x^2 = 1$	
	$x = \pm 1$	
	x = 1 (since P lies in the 1 st quadrant/aangesien P in die 1 ^{ste} kwadrant lê)	$\checkmark x = 1 \tag{2}$
5.5.2	_	(2)
	$\sin P\hat{O}T = \frac{\sqrt{3}}{2}$	✓ correct ratio/
	$\hat{POT} = 60^{\circ}$	korrekte verh √ 60°
	$\hat{POT} + \alpha = 90^{\circ}$	V 00°
	$\alpha = 90^{\circ} - 60^{\circ}$	
	= 30°	✓ answer/antw
		(3)
5.5.3	$\sin(-30^\circ) = \frac{b}{20}$	✓ correct ratio/
	$b = 20\sin(-30^\circ)$	korrekte verh $ \checkmark b = 20\sin(-30^\circ) $
	b = -10	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$
	$\cos(-30^\circ) = \frac{a}{20}$	10
		✓ correct ratio/
	$a = 20\cos(-30^{\circ})$	korrekte verh $\checkmark a = 10\sqrt{3} \text{ OR}17,32$
	$a = 10\sqrt{3}$ OR/OF 17,32 $Q(10\sqrt{3};-10)$ OR/OF $Q(17,32;-10)$	$u = 10\sqrt{3}$ OK 17,32
	$Q(10\sqrt{3};-10)$ OR/OF $Q(17,32;-10)$	(5)
	OR/OF	
	$OQ^2 = 400$	✓ subst into distance
		✓ subst into distance formula/subst in
	$OQ^2 = 400$ $a^2 + b^2 = 400$ $PQ^2 = 2^2 + 20^2$ $PQ^2 = 404$	✓ subst into distance formula/subst in afstandformule
	$OQ^{2} = 400$ $a^{2} + b^{2} = 400$ $PQ^{2} = 2^{2} + 20^{2}$ $PQ^{2} = 404$ $(a-1)^{2} + (b-\sqrt{3})^{2} = 404$	✓ subst into distance formula/subst in afstandformule ✓ subst into distance
	$OQ^{2} = 400$ $a^{2} + b^{2} = 400$ $PQ^{2} = 2^{2} + 20^{2}$ $PQ^{2} = 404$ $(a-1)^{2} + (b-\sqrt{3})^{2} = 404$ $a^{2} - 2a + 1 + b^{2} - 2\sqrt{3}b + 3 = 404$	✓ subst into distance formula/subst in afstandformule
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	$OQ^{2} = 400$ $a^{2} + b^{2} = 400$ $PQ^{2} = 2^{2} + 20^{2}$ $PQ^{2} = 404$ $(a-1)^{2} + (b-\sqrt{3})^{2} = 404$ $a^{2} - 2a + 1 + b^{2} - 2\sqrt{3}b + 3 = 404$ $400 - 2a + 4 - 2\sqrt{3}b = 404$ $2a = -2\sqrt{3}b$ $a = -\sqrt{3}b$ $(-\sqrt{3}b)^{2} + b^{2} = 400$ $b^{2} = 100$ $b = -10 \qquad (b < 0)$ $a = -\sqrt{3}(-10)$	 ✓ subst into distance formula/subst in afstandformule ✓ subst into distance formula/subst in afstandformule ✓ a = -√3b
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