Question	Answer	Marks	Guidance
9(a)	Correct pair of simplified linear equations in a and d with terms collected, e.g., $3a+3d=-36$ isw or $a+d=-12$ isw $3a+30d=72$ isw or $a+10d=24$ isw	**B3**	**B2** for one correct simplified equation or **B1** for $a+a+d+a+2d=-36$ or $\frac{3}{2}\{2a+(3-1)d\}=-36$ or $a+9d+a+10d+a+11d=72$ or $\frac{12}{2}\{2a+(12-1)d\}-\frac{9}{2}\{2a+(9-1)d\}=72$ or $12a+66d-9a-36d=72$ or $\frac{3}{2}\{2(a+9d)+(3-1)d\}=72$
	Solves two linear equations for d or a e.g. $27d=108 \rightarrow d=\ldots$ or $9d=36 \rightarrow d=\ldots$ or $a+10(-12-a)=24 \rightarrow a=\ldots$ $27a=-432 \rightarrow a=\ldots$	**M1**	**FT** *their* linear equations in a and d providing at least **B1** earned and the equations have a solution
	$d=4$ and $a=-16$ nfww	**A1**	
9(b)	1.2^n *101	**B3**	where * is any inequality sign or =; **B2** for $\frac{[1](1.2^n-1)}{(1.2-1)}*500$ or **B1** for $r=1.2$ soi
	$n\log 1.2*\log 101$ or $\log_{1.2}101$ soi	**M1**	**FT** 1.2^n * *their* 101 providing **B2** has been awarded and (*their* 101) >0
	$n=26$	**A1**	**dep** on all previous marks awarded

Question	Answer	Marks	Guidance
10(a)	Writes cot$x$ and tan$x$ in terms of sin$x$ and cos$x$: $\frac{\sin x}{1-\frac{\cos x}{\sin x}}+\frac{\cos x}{1-\frac{\sin x}{\cos x}}$	**M1**	OR $\frac{\sin x\left(1-\frac{\sin x}{\cos x}\right)+\cos x\left(1-\frac{\cos x}{\sin x}\right)}{\left(1-\frac{\cos x}{\sin x}\right)\left(1-\frac{\sin x}{\cos x}\right)}$
	Simplifies denominator: $\frac{\sin x}{\frac{\sin x-\cos x}{\sin x}}+\frac{\cos x}{\frac{\cos x-\sin x}{\cos x}}$	**A1**	OR $\frac{\sin x\left(\frac{\cos x-\sin x}{\cos x}\right)+\cos x\left(\frac{\sin x-\cos x}{\sin x}\right)}{\left(\frac{\sin x-\cos x}{\sin x}\right)\left(\frac{\cos x-\sin x}{\cos x}\right)}$
	Writes as two simple algebraic fractions: $\frac{\sin^2 x}{\sin x-\cos x}+\frac{\cos^2 x}{\cos x-\sin x}$	**A1**	OR writes as a single simple algebraic fraction: $\frac{\sin^2 x(\cos x-\sin x)+\cos^2 x(\sin x-\cos x)}{(\sin x-\cos x)(\cos x-\sin x)}$
	Writes as a difference with a common denominator: $\frac{\sin^2 x}{\sin x-\cos x}-\frac{\cos^2 x}{\sin x-\cos x}$	**A1**	OR $\frac{\sin^2 x(\cos x-\sin x)-\cos^2 x(\cos x-\sin x)}{(\sin x-\cos x)(\cos x-\sin x)}$
	Correct simplification to given answer, e.g., $\frac{(\sin x-\cos x)(\sin x+\cos x)}{(\sin x-\cos x)}=\sin x+\cos x$ or $\frac{\cancel{(\sin x-\cos x)}(\sin x+\cos x)}{\cancel{(\sin x-\cos x)}}\left[=\sin x+\cos x\right]$	**A1**	All steps correct and final step fully justified by factorising