Question	Answer	Marks	Guidance
3(b)	**Either** $3\log_a 4 = \dfrac{3}{\log_4 a}$	**B1**	
	$2(\log_4 a)^2 - 7\log_4 a + 3 = 0$ $(2\log_4 a - 1)(\log_4 a - 3) = 0$ $\log_4 a = \dfrac{1}{2}$ or $\log_4 a = 3$	**M1**	For obtaining a quadratic equation and solution
	$a = 4^{\frac{1}{2}}$ or $a = 4^3$	**M1**	**Dep** For dealing with the logarithm correctly once, may be implied by a correct solution
	64	**A1**	
	2	**A1**	
	Or $2\log_4 a = \dfrac{2}{\log_a 4}$	**(B1)**	
	$3(\log_a 4)^2 - 7\log_a 4 + 2 = 0$ $(3\log_a 4 - 1)(\log_a 4 - 2) = 0$ $\log_a 4 = \dfrac{1}{3}$ or $\log_a 4 = 2$	**(M1)**	For obtaining a quadratic equation and solution
	$a^{\frac{1}{3}} = 4$ or $a^2 = 4$	**(M1)**	**Dep** For dealing with the logarithm correctly once, may be implied by a correct solution
	64	**(A1)**	
	2	**(A1)**	
4	$\tan\left(2x + \dfrac{\pi}{3}\right) = \dfrac{1}{\sqrt{3}}$	**B1**	
	$x = -\dfrac{7\pi}{12}, -\dfrac{\pi}{12}, \dfrac{5\pi}{12}, \dfrac{11\pi}{12}$	**3**	**M1** for using correct order of operations **A1** for two correct solutions **A1** for two further correct solutions and no other solutions in range

Question	Answer	Marks	Guidance
5	**Either** Maximum when $\sin\frac{x}{3}=1$ or minimum when $\sin\frac{x}{3}=-1$	**M1**	For recognition that value of maximum or minimum is necessary
	$c=9$	**A1**	
	$c=-1$	**A1**	
	or $\frac{\mathrm{d}y}{\mathrm{d}x}=\frac{5}{3}\cos\frac{x}{3}$ When $\frac{\mathrm{d}y}{\mathrm{d}x}=0$, $\sin\frac{x}{3}=+1$ or -1	**(M1)**	For differentiation, equating to zero to obtain values for $\sin\frac{x}{3}$
	$c=9$	**(A1)**	
	$c=-1$	**(A1)**	
6(a)	$0=-\frac{5}{4}+\frac{a}{4}+5+b$	**M1**	For use of the factor theorem
	$-24=-10+a+10+b$	**M1**	For use of the remainder theorem
	$a+4b=-15$ $a+b=-24$ leading to	**M1**	**Dep** on both previous **M** marks for solution of *their* equations without using a calculator
	$a=-27$, $b=3$	**A1**	
6(b)	$(2x+1)(5x^2\ldots\ldots\ldots+\textit{their}\ \ b)$	**M1**	Allow for observation or algebraic long division. *Their a* and *b* must be integers.
	$(2x+1)(5x^2-16x+3)$	**A1**	
	$(2x+1)(5x-1)(x-3)$	**2**	**M1** for attempt to factorise *their* 3-term quadratic **A1** all correct from fully correct working
6(c)	3	**B1**	**FT** on *their* (integer) *b*
7(a)(i)	$\mathbf{b}-\mathbf{a}$	**B1**	
7(a)(ii)	$\mathbf{c}-\mathbf{b}$	**B1**	