Question	Answer	Marks	Partial Marks
8(a)	$S_{30} = \frac{30}{2}\{2a + 29d\} = -1065$	**B1**	
	$S_{50} - S_{30} =$ $\frac{50}{2}\{2a + 49d\} - \left(\frac{30}{2}\{2a + 29d\}\right) = -2210$ or $S_{50} = \frac{50}{2}\{2a + 49d\} = -2210 - 1065$	**B1**	
	Solves *their* linear equations in a and d as far as a = .. or d = … Some correct pairs are e.g. $150a + 2175d = -5325$ $150a + 3675d = -9825$ or $30a + 435d = -1065$ $50a + 1225d = -3275$ or $2a + 49d = -131$ $2a + 29d = -71$	**M1**	**dep** on an attempt to form *their* equations using at least one sum formula
	$a = 8$, $d = -3$	**A2**	**A1** for each
8(b)	$4 + 4r + 4r^2 = 7$ or $\frac{4(1-r^3)}{1-r} = 7$ oe	**B1**	
	$4r^2 + 4r - 3[= 0]$ oe	**B1**	
	Solves or factorises *their* 3-term quadratic oe e.g. $(2r - 1)(2r + 3)$ [= 0]	**M1**	
	$r = 0.5$, -1.5	**A1**	
	$\left[\frac{4}{1-0.5} =\right]$ 8 only, nfww	**A1**	
9(a)	Valid explanation: Range of g is g > 0 oe	**B1**	
9(b)	$\frac{1}{\left(\frac{3x^2}{4x-1}\right)^2}$	**M1**	
	$\frac{(4x-1)^2}{9x^4}$ or simplified equivalent, isw	**A1**	

Question	Answer	Marks	Partial Marks
9(c)	$3x^2 - 4xy + y[=0]$ or $3y^2 - 4xy + x[=0]$	**B1**	
	$[x =]\dfrac{-(-4y) \pm \sqrt{(-4y)^2 - 4(3)(y)}}{2(3)}$ oe or $[y =]\dfrac{-(-4x) \pm \sqrt{(-4x)^2 - 4(3)(x)}}{2(3)}$ oe	**M1**	**FT** *their* expression providing it has at most one sign error
	Justifies the negative square root	**B1**	
	$f^{-1}(x) = \dfrac{2x - \sqrt{x(4x-3)}}{3}$	**A1**	
10(a)	$\tan^2 x + 2\tan x \sec x + \sec^2 x$ or $\left(\dfrac{\sin x}{\cos x} + \dfrac{1}{\cos x}\right)^2$	**M1**	
	$\dfrac{\sin^2 x}{\cos^2 x} + 2 \times \dfrac{\sin x}{\cos x} \times \dfrac{1}{\cos x} + \dfrac{1}{\cos^2 x}$ or factorises $\dfrac{1}{\cos^2 x}(\sin x + 1)^2$ oe	**A1**	
	$\dfrac{(1+\sin x)^2}{1-\sin^2 x}$	**A1**	
	$\dfrac{(1+\sin x)(1+\sin x)}{(1-\sin x)(1+\sin x)} = \dfrac{1+\sin x}{1-\sin x}$ or $\dfrac{(1+\sin x)^2}{(1-\sin x)(1+\sin x)} = \dfrac{1+\sin x}{1-\sin x}$	**A1**	must be fully justified
10(b)	$7\sin 3\theta = 5$	**B1**	
	One correct value for 3θ soi e.g. 45.58… 134.4… 405.5… 494.4…	**M1**	
	15.2 or 15.19 to 15.195 44.8 or 44.80 to 44.81 135.2 or 135.19 to 135.195 164.8 or 164.80 to 164.81	**A2**	with no extras in range **A1** for any 2 correct, ignoring extras

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