Question Number	Scheme	Marks
9 **(a)**	$\dfrac{ar^4}{ar^2} = \dfrac{768}{48}$	M1A1
	$r^2 = 16 \qquad r = \pm 4$	A1 (3)
(b)	$ar^2 = 48 \quad a = 3$	B1 (1)
(c)	$r = -4$	B1
	$S_9 = \dfrac{3\left((-4)^9 - 1\right)}{-4 - 1}, \quad = 157287$	M1A1,A1 (4)
(d)	$r = \dfrac{1}{4}$	B1 (1)
(e)	$T_9 = \dfrac{3\left(1 - \left(\dfrac{1}{4}\right)^9\right)}{1 - \dfrac{1}{4}} = 3.999984741$	M1A1 (2)
(f)	$T_\infty = \dfrac{3}{1 - \dfrac{1}{4}} = 4$	M1A1
	$4 - 0.002 > \dfrac{3\left(1 - \left(\frac{1}{4}\right)^n\right)}{\frac{3}{4}}$	M1
	$\dfrac{3.998}{4} > 1 - \left(\dfrac{1}{4}\right)^n$	
	$\left(\dfrac{1}{4}\right)^n > 1 - \dfrac{3.998}{4} = 0.0005$	
	Solve by logs or trial and error	M1
	greatest n is 5	A1 (5)
		[16]

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