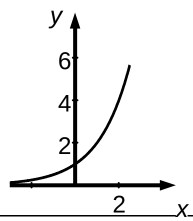
1	**i**	log a + log (b^t) www clear use of log (b^t) = t log b dep	B1 B1	condone omission of base throughout question	 2
	ii	(2.398), 2.477, 2.556 , 2.643, 2.724 points plotted correctly f.t. ruled line of best fit f.t.	T1 P1 1	 On correct square	 3
	iii	log a = 2.31 to 2.33 a = 204 to 214 log b = 0.08 approx b = 1.195 to 1.215	M1 A1 M1 A1	ft their intercept ft their gradient	 4
	iv	eg £210 million dep	1	their £a million	1
	v	$\frac{\log 1000 - \text{their intercept}}{\text{their gradient}} \approx \frac{3-2.32}{0.08}$ = 8.15 to 8.85	M1 A1	 or B2 from trials	 2

2	(i) (ii) −6 (iii)  	2 1 1 1	M1 for $2^2 + 2^3 + 2^4 + 2^5$ o.e. Correct in both quadrants Through (0, 1) shown dep.	 5

3	(i) 0.23 c.a (ii) 0.1 or (iii) x + 2) or 12x + 8 (iv) y =] 10^{3x+2} o.e.	1 1 1 1	 10^{-1} not sufficient	 4

4	(i) 3 $_{a}x$ ii) $b = \frac{1000}{c}$	2 2	M1 for 4 $\log_a x$ or $-\log_a x$; or $\log x^3$ M1 for 1000 or 10^3 seen	 4

5	**i**	$\log_{10} y = \log_{10} k + \log_{10} 10^{ax}$ $\log_{10} y = ax + \log_{10} k$ compared to y = mx+c	M1 M1		 2
	ii	2.9(0), 3.08, 3.28, 3.48, 3.68 plots [tol 1 mm] ruled line of best fit drawn	T1 P1f.t L1f.t.	condone one error	 3
	iii	intercept = 2.5 approx gradient = 0.2 approx y = their 300x $10^{x(\text{their } 0.2)}$ or $y = 10^{(\text{their } 2.5 + \text{their } 0.2x)}$	M1 M1 M1f.t.	or y – 2.7 = m(x – 1)	 3
	iv	subst 75000 in any x/y eqn subst in a correct form of the relationship 11,12 or 13	M1 M1 A1	 B3 with evidence of valid working	 3
	v	"Profits change" or any reason for this.	R1	too big, too soon	1

6	(i) $_{10}\, y = 0.5x + 3$ (ii) $y = 10^{0.5x + 3}$ isw	B3 2	B1 for each term scored in either part o.e. e.g. $y = 1000 \times 10^{\sqrt{x}}$	 5

7	**i**	A 23 B 24 C 480	2 2 2	M1 for 5, 7, 9 etc or AP with $a = 5$, $d = 2$ M1 for $51 = 5 + 2(n - 1)$ o.e. M1 for attempted use of sum of AP formula eg 20/2[10+19×2]	2 2 2
	ii	A 11.78 – 11.80 B $5 \times 1.1^{n-1} > 50$ $1.1^{n-1} > 10$ $(n - 1) \log 1.1 > 1$ $n - 1 > 1/\log 1.1$ n = 26	2 B1 B1 L1 A1 1	 Or other step towards completion (NB answer given) independent	