2(a)	State or imply that second and fifth terms are $a\cos\theta$ and $a\cos^4\theta$ or $r^3 = \frac{1}{64}$
	Attempt solution of equation of form $\cos^3\theta = k$ as far as $\cos\theta = \ldots$, where $0 < k < 1$
	Obtain $\cos\theta = 0.25$, and hence $\theta = 1.32$ only
2(b)	Attempt to find a using *their* θ and substitute in correct formula for sum to infinity
	Obtain $a = 32$ and use exact value of r to obtain $\frac{128}{3}$

3	x^4 term from $(px+3)^5$ is $5p^4x^4 \times 3$
	Identify term involving $x^6 \times \frac{p^2}{x^2}$ as relevant term from $\left(x^3 + \frac{p}{x}\right)^4$
	Obtain $6p^2x^4$ or $-6p^2x^4$
	Attempt solution for p^2 of equation that is quadratic in p^2
	Obtain $15p^4 - 6p^2 - 216 = 0$ or equivalent and hence $p = 2$

9(a)	Attempt to express each of $S_2 - 1,\ S_4,\ S_9$ in terms of d (with at least one correct)
	Obtain $S_2 - 1 = 3 + d, \quad S_4 = 8 + 6d, \quad S_9 = 18 + 36d$
	Attempt equation in d by linking the three values
	Obtain correct $(3+d)+(18+36d)=2(8+6d)$ or equivalent, and hence $d = -\frac{1}{5}$
9(b)	2 + 14 × *their d*
	Second progression: obtain either first term = $\frac{14}{5}$ or common difference = 4
	Second progression: attempt to find 15th term
	Obtain 58.8, and hence difference = 59.6

2	$\binom{6}{2} \times (2x^2)^2 \times \left(-\frac{3}{x}\right)^{6-2}$ or $\binom{6}{2} \times 2^6 \times (x^2)^2 \times \left(-\frac{3}{2x}\right)^{6-2}$
	Identifying the relevant term of the form: $k \times (2x^2)^2 \times \left(-\frac{3}{x}\right)^{6-2}$ or $k \times 2^6 \times (x^2)^2 \times \left(-\frac{3}{2x}\right)^{6-2}$
	= 4860

8(a)	$-3c-b=b-a$ or $2b=a-3c$ or $\dfrac{b}{a}=\dfrac{c}{b}$ or $b^2=ac$ oe
	$4ac=(a-3c)^2$ or $2\sqrt{ac}=a-3c$ oe
	$\Rightarrow a^2-6ac+9c^2=4ac \Rightarrow a^2-10ac+9c^2=0$

8(b)(i)	$81-90c+9c^2=0 \Rightarrow [9](c-9)(c-1)=0$ or $\dfrac{90\pm\sqrt{5184}}{18}\left[=\dfrac{90\pm 72}{18}\right]$
	$c=1$
	$r^2=\dfrac{\mathit{their}\,1}{9} \Rightarrow r=\left[\dfrac{1}{3}\right]$, or $b^2=\mathit{their}\ 1\times 9 \Rightarrow b=3 \Rightarrow r=\left[\dfrac{1}{3}\right]$
	$S_\infty=\dfrac{9}{1-\frac{1}{3}}$
	$S_\infty=\dfrac{27}{2}$ oe

8(b)(ii)	$d = -6$
	$S_{20} = \frac{20}{2}\left(2 \times 9 + (20-1) \times (-6)\right)$
	$S_{20} = -960$

3(a)	$ar^2 = 18$, $a + ar + ar^2 = 26$ or $a + ar + 18 = 26$
	$\frac{18}{r^2} + \frac{18}{r} + 18 = 26 \Rightarrow 8r^2 - 18r - 18[=0] \Rightarrow [(4r+3)(r-3)=0]$
	$r = -\frac{3}{4}$ [or $r = 3$]
	$a = 32$
	Tenth term = −2.40
	Alternative Method for first three marks in Question 3(a)
	$ar^2 = 18$, $26 = \frac{a(1-r^3)}{1-r}$
	$26 = \frac{\frac{18}{r^2}(1-r^3)}{1-r} \Rightarrow 8r^3 - 26r^2 + 18[=0]$
	$r = -\frac{3}{4}$ [or $r = 3, 1$]
3(b)	$S_\infty = \frac{32}{1-\left(-\frac{3}{4}\right)}$
	$\frac{128}{7}$

5(a)(i)	$32-80px+80p^2x^2$
5(a)(ii)	$1-2x+\frac{3}{2}x^2$
5(b)	Coefficient of $x^2 = 32\times\frac{3}{2}+(-2\times-80p)+80p^2$
	$48+160p+80p^2=93 \Rightarrow 5(4p+9)(4p-1)[=0]$
	$p=-\frac{9}{4}$ and $p=\frac{1}{4}$

3	$\begin{pmatrix}5\\3\end{pmatrix}$ or $\begin{pmatrix}5\\2\end{pmatrix}$ or $10\times\left(px^2\right)^{5-3}\times\left(\frac{4}{p}x\right)^3$
	$10p^2\times\frac{64}{p^3}$
	$\frac{\textit{Their}\ \text{integer}\ k}{p}\left[x^7\right] = 1280\left[x^7\right]$
	$p=\frac{1}{2}$

10(a)(i)	$8k-k^2=k^2-4k$ or $2k^2=4k+8k$ or $4k+2\left(k^2-4k\right)=8k$
	$[2k\left(k-6\right)=0\ \Rightarrow]\ k=6\ [\text{or } k=0]$

10(a)(ii)	$d\left[=8k-k^2 \text{ or } 2k \text{ or } k^2-4k\right]=12$ and $a\left[=4k\right]=24$
	$S_{20}=\frac{20}{2}\left(2\times 24+19\times 12\right)$ or $=\frac{20}{2}\left(24+252\right)$
	$S_{20}=2760$
10(b)	$ar^3=36$ and $ar^5=6$ or $r^2=\frac{1}{6}$
	$r=\sqrt{\frac{6}{36}}\left[=\frac{1}{\sqrt{6}} \text{ or } \frac{\sqrt{6}}{6}\right]$
	$a=\frac{36}{\left(\frac{1}{\sqrt{6}}\right)^3}\left[=36\times\sqrt{6}^3,\ 216\sqrt{6} \text{ or } \frac{1296}{\sqrt{6}}\right]$
	$S_\infty=\frac{216\sqrt{6}}{1-\frac{1}{\sqrt{6}}}$
	$[S_\infty=]\ \frac{1296}{\sqrt{6}-1}$ or $\frac{7776}{\sqrt{216}-6}$