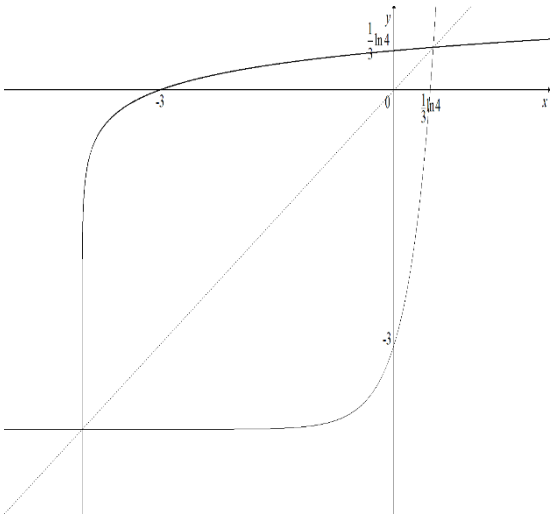
Question	Answer	Marks	Guidance
6(c)		**4**	**B1** for f(x) with correct shape in quadrant 1, 3 and 4 and appropriate asymptotic behaviour **B1** for –3 on the y-axis and $\frac{1}{3}\ln 4$ on the x-axis for f(x) must have the correct shape **B1** for $f^{-1}(x)$with correct shape in quadrant 1, 2 and 3 and appropriate asymptotic behaviour **B1** for –3 on the x-axis and $\frac{1}{3}\ln 4$ on the y-axis for $f^{-1}(x)$ must have correct shape and intersect at least once
7	$\frac{1}{3}\sin 3x - 2\cos 2x + x$	**2**	**M1** for $a\sin 3x + b\cos 2x + x$, $a \neq \pm 3$ and $b \neq \pm 8$ **A1** all correct
	$\left(\frac{1}{3}\sin\frac{3\pi}{2} - 2\cos\pi + \frac{\pi}{2}\right) - (-2)$	**M1**	**Dep** on previous **M** mark for correct substitution (seen or implied) of **both** limits in x
	$\frac{11}{3}$	**A1**	
	$\frac{\pi}{2}$	**B1**	From correct substitution (seen or implied) of **both** limits in x
8(a)	1.75	**B1**	
8(b)	$\cos BOC = \frac{7}{25}$, $\tan BOC = \frac{24}{7}$, $\sin BOC = \frac{24}{25}$ BOC = 1.287 soi	**B1**	
	Arc length = $r \times$ *their* 1.287	**B1**	Follow through on *their BOC*
	Perimeter = 12.25 + *their* 9.009 + 14	**M1**	For a complete method
	35.3	**A1**	
8(c)	$\left(\frac{1}{2}\times 7^2 \times 1.75\right) + \left(\frac{1}{2}\times 7^2 \times \textit{their } BOC\right)$ oe or $\pi \times 7^2 - \frac{1}{2}\times 7^2 \times (2\pi - 1.75 - \textit{their} 1.287)$	**M1**	For a complete method
	74.4	**A1**	
9(a)(i)	665 280	**B1**	
9(a)(ii)	221 760	**B1**	

Question	Answer	Marks	Guidance
9(b)	$8 \times 4 \times 3 \times 2 \times 1 \times 7$	**M1**	For either 8×7 or 4! or 24 as part of a product
	1344	**A1**	
10	$\tan(3x + 1.2)\left[= \frac{1}{\sqrt{2}}\right]$ or $\cos^2(3x + 1.2)\left[= \frac{2}{3}\right]$ or $\sin^2(3x + 1.2)\left[= \frac{1}{3}\right]$	**M1**	For an attempt to obtain an equation in $\sin(3x + 1.2)$, $\cos(3x + 1.2)$ or $\tan(3x + 1.2)$
	$x = -1.24, -0.195, 0.852$ or better	**4**	**M1 dep** for a correct attempt to obtain one correct solution **A1** for one correct solution in the range **M1 dep** for an attempt to obtain another solution within the range **A1** for 2 more correct solutions within the range and no extra solutions within the range
11	$\ln(3x+2) - \ln(2x+1) - \ln x$	**2**	**B1** for 1 correct term **B1** for the other two terms correct
	$\ln\frac{(3a+2)}{a(2a+1)} - \ln\frac{5}{3}$ $\ln\frac{3(3a+2)}{5a(2a+1)} = \left[\ln\frac{1}{5}\right]$ or $\ln\frac{(3a+2)}{a(2a+1)} = \ln\frac{1}{3}$	**2**	**M1** for application of limits correctly, **dep** on at least one **B** mark **M1** for application of log laws to obtain a single logarithm, dep on at least one **B** mark
	$a^2 - 4a - 3 = 0$ $a = 2 + \sqrt{7}$	**2**	**M1** for equating to $\ln\frac{1}{5}$ and attempt to solve resulting 3-term quadratic equation, dep on at least one **B** mark **A1** for $2 + \sqrt{7}$ must reject $2 - \sqrt{7}$