1	Commence integration by parts and reach $Ax\ln 3x + \int B\,\mathrm{d}x$
	Obtain $x \ln 3x - x$
	Substitute limits correctly in an expression of the form $Ax\ln 3x + Bx$
	Obtain $-1 + \ln 12$

9(a)	Commence integration and reach $px^2 \ln x + q\int x\,\mathrm{d}x$
	Obtain $3x^2 \ln x - 3\int x\,\mathrm{d}x$
	Complete integration and obtain $3x^2 \ln x - \frac{3}{2}x^2$
	Use limits correctly in an expression of the form $ax^2 \ln x - bx^2$ and equate to 4, having integrated twice
	Obtain $a = \exp\left(\frac{1}{6}\left(\frac{5}{a^2} + 3\right)\right)$ correctly
9(b)	Calculate the values of a relevant expression or pair of expressions at $a = 2$ and $a = 2.1$
	Justify the given statement with correct calculated values

9(c)	Use the iterative process $a_{n+1} = \exp\left(\frac{1}{6}\left(\frac{5}{a_n{}^2} + 3\right)\right)$ correctly at least once.
	Obtain final answer 2.02
	Show sufficient iterations to at least 4 d.p. to justify 2.02 to 2 d.p. or show that there is a sign change in $(2.015, 2.025)$

11(a)	$\frac{\mathrm{d}}{\mathrm{d}x}\sqrt{\sin 2x} = \frac{2\cos 2x}{2\sqrt{\sin 2x}}$ Accept $k\frac{\cos 2x}{\sqrt{\sin 2x}}$
	Use correct product rule
	Obtain correct derivative in any form
	Equate the derivative to zero and obtain a horizontal equation
	Use correct trig formulae to obtain an equation in one trig function
	Obtain $a = \frac{1}{6}\pi$
11(b)	Use $[\pi]\int y^2\,\mathrm{d}x$
	Use double angle formula to obtain a form that can be integrated directly, e.g. $\int \cos^2 x \sin 2x\,\mathrm{d}x = \int 2\cos^3 x \sin x\,\mathrm{d}x$
	Obtain $-(\pi)\times\frac{1}{2}\cos^4 x$
	Use correct limits correctly
	Obtain final answer $\frac{1}{2}\pi$

10(a)	Obtain quotient $\frac{1}{4}$
	Obtain remainder $-\frac{1}{4}$
10(b)	Commence integration by parts and reach $Ax^2 \tan^{-1} 2x \pm \int x^2 \frac{B}{C + Dx^2} \mathrm{d}x$
	Obtain $\frac{1}{2}x^2 \tan^{-1} 2x - \int \frac{x^2}{1+4x^2} \mathrm{d}x$
	Integrate $\int \frac{x^2}{1+4x^2} \mathrm{d}x$ to obtain an expression of the form $p \tan^{-1} 2x + qx$
	Complete integration and obtain $\frac{1}{2}x^2 \tan^{-1} 2x + \frac{1}{8} \tan^{-1} 2x - \frac{1}{4}x$
	Substitute limits correctly in an expression of the form $Fx^2 \tan^{-1} 2x + G \tan^{-1} 2x + Hx$
	Obtain answer $\frac{1}{16}\pi - \frac{1}{8}$ or exact one- or two-term equivalent with trigonometry evaluated

11(a)	Differentiate $\cos^2 x$ to obtain $-2\sin x\cos x$
	Use correct product rule
	Obtain derivative $-10\sin 2x\sin x\cos x+10\cos 2x\cos^2 x$
	Equate derivative to zero and obtain an equation in one trig function
	Obtain $3\tan^2 x = 1$, $4\sin^2 x = 1$ or $4\cos^2 x = 3$ or $\cos 3x=0$
	Obtain $x = \frac{1}{6}\pi$ only
	Alternative Method for the Question 11(a)
	Use double angle formula to obtain $y=10\sin x\cos^3 x$
	Use correct product rule
	Obtain derivative $10\cos^4 x-30\sin^2 x\cos^2 x$
	Equate derivative to zero and obtain an equation in one trig function
	Obtain $3\tan^2 x = 1$, $4\sin^2 x = 1$ or $4\cos^2 x = 3$ or $\cos 3x=0$
	Obtain $x = \frac{1}{6}\pi$ only

11(a)	**Alternative Method 2 for the Question 11(a)**
	Use double angle formula to obtain $y = \frac{5}{2}\sin 2x(\cos 2x + 1)$
	Use double angle formula to obtain $y = \frac{5}{4}\sin 4x + \frac{5}{2}\sin 2x$
	Obtain derivative $5\cos 4x + 5\cos 2x$
	Equate derivative to zero and obtain an equation in $\cos 2x$
	Obtain $\cos 2x = \frac{1}{2}$ only
	Obtain $x = \frac{1}{6}\pi$ only

11(b)	$\dfrac{du}{dx} = -\sin x$
	Reach an integral of the form $\int Au^3 \, du$
	Obtain $-10\int u^3 du$
	Substitute correct limits correctly in an expression of the form Cu^4 or $C\cos^4 x$
	Obtain answer $\dfrac{15}{8}$ or 1.875