

1	Commence integration by parts and reach $Ax \ln 3x + \int B dx$
	Obtain $x \ln 3x - x$
	Substitute limits correctly in an expression of the form $Ax \ln 3x + Bx$
	Obtain $-1 + \ln 12$
2(a)	State or imply $2 = \log_4 4^2$
	Use log power, product or quotient law e.g. $2 \log_4 (3x - 1) = \log_4 (3x - 1)^2$
	Obtain a correct equation in any form, free of logs
2(b)	Solve 3-term quadratic
	Obtain answer 4.59 only

3(a)	Obtain $3 \sin x + 4 \cos x$
	State $R = 5$
	Use trig formula to find α e.g. $\alpha = \tan^{-1} \left(\frac{3}{4} \right)$
	Obtain $\alpha = 36.9^\circ$ (or awrt 36.9°)
3(b)	Evaluate $\cos^{-1} \left(\frac{-4}{R} \right)$
	Carry out a correct method to find a value of θ in the given interval
	Obtain answer, e.g. $60(.0)^\circ$
	Obtain a second answer, e.g. 84.6° and no other in the interval
4	Use correct product rule: $p \sin 4x e^{\sin 2x} + q \cos 2x \cos 4x e^{\sin 2x}$
	Obtain derivative $-4 \sin 4x e^{\sin 2x} + 2 \cos 2x \cos 4x e^{\sin 2x}$
	Equate derivative to zero and obtain an equation in one trig function
	Obtain $2 \sin^2 2x + 4 \sin 2x - 1 = 0$
	Obtain $x = 0.113$ and no other root

10(a)	State or imply the form $A + \frac{B}{3+x} + \frac{Cx+D}{2+x^2}$
	Use a correct method for finding a constant
	Obtain one of $A = 1$, $B = -4$, $C = 1$ and $D = -3$
	Obtain a second value
	Obtain a third value
	Obtain all four correct values
10(b)	Use a correct method to find the first two terms in the expansion of $(3+x)^{-1}$, $\left(1+\frac{x}{3}\right)^{-1}$, $(2+x^2)^{-1}$ or $\left(1+\frac{x^2}{2}\right)^{-1}$
	Obtain correct unsimplified expansions up to the term in x^2 of each partial fraction
	Multiply $(Cx+D)$ by the expansion of $\left(1+\frac{x^2}{2}\right)^{-1}$ up to the term in x^2 where $CD \neq 0$
	Obtain final answer $-\frac{11}{6} + \frac{17}{18}x + \frac{65}{108}x^2$