2	Attempt solution of quadratic equation in e^{2x} to obtain at least one value of e^{2x}
	Obtain $(e^{2x}-12)(e^{2x}+4)=0$ OE, and hence at least $e^{2x}=12$
	Obtain $x=\frac{1}{2}\ln 12$ or 1.24 and no other solution

5(a)	Attempt solution of $8e^{-\frac{1}{2}x}-1=0$ with use of a relevant logarithm property
	Confirm $x=6\ln 2$
	Alternative Method for Question 5(a)
	Substitute $x=6\ln 2$ in $8e^{-\frac{1}{2}x}-1$ and show use of a relevant logarithm property
	Obtain $8e^{-3\ln 2}-1$ and hence $8e^{\ln\frac{1}{8}}-1$ or equivalent and verify answer 0
5(b)	Integrate $8e^{-\frac{1}{2}x}-1$ to obtain the form $ke^{-\frac{1}{2}x}-x$
	Obtain correct $-16e^{-\frac{1}{2}x}-x$
	Apply limits 0 and $6\ln 2$ to obtain $-16e^{-\frac{1}{2}\times 6\ln 2}-6\ln 2+16$
	Attempt area of triangle minus area under curve
	Obtain $\frac{1}{2}\times 6\ln 2\times 7-(14-6\ln 2)$ or equivalent, and hence $27\ln 2-14$

1	Apply relevant logarithm property
	Obtain correct equation without logarithms $\frac{3x+5}{x-2}=e^4$ or equivalent
	Solve equation to find exact value of x
	Obtain $\frac{2e^4+5}{e^4-3}$

2(a)	Apply logarithms to both sides and use relevant logarithm property
	Obtain $x<\frac{\ln 0.05}{\ln 4}$ or equivalent and hence $x<-2.16$
2(b)	Attempt solution of equations $3x+8=\pm 9$ or of quadratic equation $(3x+8)^2=9^2$
	Obtain values $-\frac{17}{3}$ and $\frac{1}{3}$
	Conclude $-\frac{17}{3}<x<\frac{1}{3}$
2(c)	State $-5,-4,-3$ only

6(a)	Substitute $y = \mathrm{e}^{-1}$ in equation and simplify to quadratic equation in x
	Evaluate discriminant
	Obtain $-x^2 + 6x - 11 = 0$, giving discriminant -8 and confirm result
6(b)	Attempt use of product rule for differentiation of $(x^2 - 3)\ln y$
	Obtain $2x \ln y + \dfrac{x^2 - 3}{y}\dfrac{\mathrm{d}y}{\mathrm{d}x}$
	Obtain complete $2x \ln y + \dfrac{x^2 - 3}{y}\dfrac{\mathrm{d}y}{\mathrm{d}x} + 6 = 0$
	Substitute $x = 2$ and $y = \mathrm{e}^2$ to find value of gradient of tangent
	Obtain gradient $-14\mathrm{e}^2$
	Obtain equation $y = -14\mathrm{e}^2 x + 29\mathrm{e}^2$ or equivalent of required form