

Question Number	Scheme	Marks
<b>3</b>	$3y = 12 - 4x \Rightarrow y = 4 - \frac{4}{3}x \quad \text{OR} \quad 4x = 12 - 3y \Rightarrow x = 3 - \frac{3}{4}y$ $(x+1)^2 + \left(4 - \frac{4}{3}x - 2\right)^2 = 4 \quad \left  \quad \left(3 - \frac{3}{4}y + 1\right)^2 + (y-2)^2 = 4\right.$ $\Rightarrow 25x^2 - 30x + 9 = 0 \quad 3\text{TQ} \quad \Rightarrow 25y^2 - 160y + 256 = 0 \quad 3\text{TQ}$ $(5x-3)(5x-3) = 0 \Rightarrow x = \frac{3}{5} \quad (5y-16)(5y-16) = 0 \Rightarrow y = \frac{16}{5}$ $y = 4 - \frac{4}{3} \times \frac{3}{5} = \frac{16}{5} \quad x = 3 - \frac{3}{4} \times \frac{16}{5} = \frac{3}{5}$	B1 M1 M1A1 M1A1 A1 (7)
B1 M1 M1 A1 M1 A1 A1	Write the linear equation to read $x = \dots$ or $y = \dots$ . May be seen explicitly or implied by subsequent working. (Equivalent forms accepted) Substitute to obtain a quad equation in one variable Simplify to a 3 term quadratic - terms in any order - coeffs need not be integers Correct 3 term quadratic - terms in any order - coeffs need not be integers Their 3 term quadratic solved by any valid method. (Can still be earned if the discriminant is negative.) Correct values for one variable (B1 on e-pen) Correct values for the second variable Equivalents accepted for both variables <b>NB:</b> Calculator solutions for the quadratic accepted <b>provided</b> both roots correct.	
<b>4</b>	$f'(x) = 2e^{2x}(x+1)^{0.5} + e^{2x} \frac{(x+1)^{-0.5}}{2}$ $f'(x) = e^{2x} \left( 2(x+1)^{0.5} + \frac{1}{2(x+1)^{0.5}} \right)$ $\Rightarrow e^{2x} \left( \frac{4(x+1)+1}{2(x+1)^{0.5}} \right) \Rightarrow \frac{e^{2x}(4x+5)}{2\sqrt{x+1}} \quad ***$	M1A1A1 dM1 dM1A1cso <b>(6)</b>
M1 A1A1 dM1 dM1 A1cso	Attempt to differentiate using the product rule. Must be the sum of two terms both with $(x+1)^{+/-0.5}$ and $e^{2x}$ . Constants may be incorrect If quotient rule is used the numerator must be the difference of two terms both with $(x+1)^{+/-0.5}$ and $e^{2x}$ and the denominator must be $(x+1)^{-1}$ . A1A1 Both terms fully correct; A1A0 one term fully correct Extract a common factor of form $ke^{2x}$ where $k$ is an integer Simplify the bracket by combining to a single term The above steps may be carried out in either order but marks <b>must</b> be entered in this order. These 2 M marks are dependent on the first M mark but not on each other. Obtain the GIVEN answer with no errors seen $(x+1)^{\frac{1}{2}}$ scores A0	