

Q	Marking instructions	AO	Marks	Typical solution
6	Recalls gradient function for e^{kx}	1.2	B1	Gradient of e^{-2x} is $-2e^{-2x}$
	Finds gradient of line	1.1b	B1	Gradient of line is $-\frac{1}{8}$
	Equates their gradient of line to their gradient of tangent	3.1a	M1	$-2e^{-2x} = -\frac{1}{8}$
	Solves their equation for x	1.1a	M1	$e^{2x} = 16$
	Obtains correct value for x as $\ln 4$	1.1b	A1	$2x = \ln 16$
	Substitutes their x value to obtain a value for y in a correct but unsimplified form Or uses gradient = $-2y = -\frac{1}{8}$	1.1a	M1	$x = \frac{1}{2} \ln 16 = \ln 4$
	Obtains correct value for y	1.1b	R1	$y = e^{-2\ln 4} = e^{-\ln 16} = \frac{1}{e^{\ln 16}}$
	Total		7	$y = \frac{1}{16}$ P is $(\ln 4, \frac{1}{16})$