Question	Answer	Marks	Partial Marks
6(a)	$p'(x)$: $18x^2 + 2ax - 52$	**B1**	
	$18 + 2a - 52 = 4$	**M1**	**FT** if at least 2 terms correct in derivative and has a term in a
	$a = 19$	**A1**	
	Correct method to find b $\frac{6\times 27}{8} + \frac{9(19)}{4} - \frac{52\times 3}{2} + b = 0$ or $\frac{81}{4} + \frac{171}{4} - 78 + b = 0$ oe or correct elimination of a using $9a + 4b = 231$ oe and $2a - 34 = 4$ oe	**M1**	**FT** *their* integer value of a if used $9(19) + 4b = 231$
	$b = 15$	**A1**	If 0 scored, **SC1** for $9a + 4b = 231$ or $\frac{81}{4} + \frac{9a}{4} - 78 + b = 0$ or $\frac{9}{4}a + b = \frac{231}{4}$ oe
6(b)	$p(x) = (2x-3)(3x^2 + 14x - 5)$	**M2**	**M1** for two terms correct in quadratic factor
	$(2x-3)(3x-1)(x+5)$	**A1**	
7(a)(i)	$x > 0.6$	**B1**	
7(a)(ii)	$[x =]\frac{13}{5}$ or 2.6	**B1**	nfww
7(b)	$\frac{1}{2}\log_y 64 = \log_y 8$ soi or $4 = \log_y y^4$ soi	**B1**	
	Combines log terms e.g. $\log_y \frac{x}{1296} = 4$ or $\log_y x = \log_y 1296y^4$ or $\log_y \frac{1296}{x} = -4$	**B2**	**B1** for one further correct application of a relevant log law e.g. $\log_y x = 4 + \log_y 1296$ or $\log_y x = \log_y y^4 + \log_y 8 + \log_y 162$
	$y^4 = \frac{x}{1296}$ or $1296y^4 = x$ oe	**M1**	
	$y = \frac{\sqrt[4]{x}}{6}$ or $y = \frac{x^{\frac{1}{4}}}{6}$	**A1**	mark final answer

Question	Answer	Marks	Partial Marks
8(a)	$\frac{\mathrm{d}}{\mathrm{d}x}(\mathrm{e}^{4x}) = 4\mathrm{e}^{4x}$	**B1**	
	$8x\mathrm{e}^{4x} + 2\mathrm{e}^{4x}$ isw	**B1**	**FT** *their* $k\mathrm{e}^{4x}$
8(b)	Use of part (a) $\int 8x\mathrm{e}^{4x}\,\mathrm{d}x = 2x\mathrm{e}^{4x} - \int 2\mathrm{e}^{4x}\,\mathrm{d}x$ oe	**B1**	**FT** part **(a)** providing of form $kx\mathrm{e}^{4x} + 2\mathrm{e}^{4x}$
	$\int x\mathrm{e}^{4x}\,\mathrm{d}x = \frac{1}{4}x\mathrm{e}^{4x} - \frac{1}{4}\int \mathrm{e}^{4x}\mathrm{d}x$ oe	**M1**	**FT** part **(a)** providing of form $kx\mathrm{e}^{4x} + 2\mathrm{e}^{4x}$
	$\frac{x\mathrm{e}^{4x}}{4} - \frac{\mathrm{e}^{4x}}{16} + c$ oe	**A2**	**A1** for any 2 terms correct
9(a)	$\sqrt{40^2 + (-9)^2}$ soi	**M1**	
	$\frac{40}{41}\mathbf{i} - \frac{9}{41}\mathbf{j}$ oe	**A1**	mark final answer
9(b)(i)	$0 < k < 1$	**B1**	
9(b)(ii)	$\overrightarrow{OR} = \mathbf{p} + k(\mathbf{q} - \mathbf{p})$ or $\overrightarrow{OR} = \mathbf{q} + (1-k)(\mathbf{p} - \mathbf{q})$	**M1**	
	$\overrightarrow{OR} = (1-k)\mathbf{p} + k\mathbf{q}$	**A1**	
	$\lambda + \mu = 1 - k + k = 1$	**A1**	