Question	Answer	Marks	Guidance
4(b)	$\left(3x^{\frac{2}{5}}-5\right)\left(x^{\frac{2}{5}}-1\right)=0$	**2**	**M1** for recognition of a quadratic in $x^{\frac{2}{5}}$ **Dep M1** for solution and a correct attempt to get at least one solution for x
	[±]3.59	**A1**	
	[±]1	**A1**	
5(a)	$0=8a+4b+12+4$	**B1**	For $\mathrm{p}(2)$
	$\mathrm{p}'(x)=3ax^2+2bx+6$	**M1**	For an attempt to obtain $\mathrm{p}'(x)$
	$3a-2b+6=-7$	**M1**	**Dep** for $\mathrm{p}'(-1)$
	$0=2a+b+4$ $-13=3a-2b$	**M1**	**Dep** on both previous **M** marks for solution of equations to obtain both a and b
	$a=-3 \quad b=2$	**A1**	
5(b)	$\mathrm{p}''(x)=-18x+4$	**M1**	For differentiation of *their* $\mathrm{p}'(x)$ to obtain $\mathrm{p}''(x)$
	4	**A1**	**FT** on twice *their b*.
6	$\frac{\mathrm{d}y}{\mathrm{d}x}=m\mathrm{e}^{3x}+2x^2(+c)$	**M1**	
	$\frac{\mathrm{d}y}{\mathrm{d}x}=2\mathrm{e}^{3x}+2x^2(+c)$	**A1**	
	$5=2+c$ $c=3$	**M1**	**Dep** on previous **M** mark
	$\mathrm{f}(x)=p\mathrm{e}^{3x}+qx^3...$	**M1**	
	$y=\frac{2}{3}\mathrm{e}^{3x}+\frac{2}{3}x^3...$	**A1**	
	$\frac{5}{3}=\frac{2}{3}+d$ $d=1$	**M1**	**Dep** on previous **M** mark
	$(\mathrm{f}(x)=) \quad \frac{2}{3}\mathrm{e}^{3x}+\frac{2}{3}x^3+3x+1$	**A1**	
7(a)	6	**B1**	

Question	Answer	Marks	Guidance
7(b)	$b = 192a$	**B1**	May be implied by the term in x
	$c = 240a^2$	**B1**	May be implied by the term in x^2
	$\frac{c}{240} = \frac{b^2}{192^2}$	**M1**	For elimination of a
	$5b^2 = 768c$	**A1**	For correct manipulation to verify the given answer
7(c)	$a = \frac{1}{16}$	**B1**	
	$c = \frac{15}{16}$	**B1**	
8(a)	$\sin\frac{AOC}{2} = \frac{3}{5}$ or $6^2 = 5^2 + 5^2 - (2\times5\times5)\cos AOC$	**M1**	For a complete method to find AOC
	$AOC = 1.2870$ $AOC = 1.287$	**A1**	**AG** Must see $AOC = 1.2870$ or better before rounding for **A1**
8(b)	Arc length = 1.287×5	**B1**	
	Perimeter = 32.4	**B1**	
8(c)	Sector area = $\frac{1}{2}\times5^2\times1.287$	**B1**	
	Area of triangle = $\frac{1}{2}\times5^2\times\sin1.287$	**B1**	
	Total area = 28.1	**B1**	
9(a)	$\frac{dy}{dx} = 2(2x+1)(x-3) + 2(x-3)^2$ or $\frac{dy}{dx} = 6x^2 - 22x + 12$	**M1**	For differentiation of a quotient, or expansion and subsequent differentiation
	$0 = 2(x-3)(3x-2)$	**M1**	**Dep** for simplification, equating to zero and attempt to solve
	$(3, 0)$	**A1**	
	$\left(\frac{2}{3}, \frac{343}{27}\right)$	**A1**	