| Question | Answer | Marks | Partial Marks |
|---|---|---|---|
| 6(a) | $\sqrt{16^2+7.5^2-2(16)(7.5)\cos\frac{2\pi}{7}}$ $+(16-7.5)+16\times\frac{2\pi}{7}$ oe, soi | **M2** | **M1** for $\sqrt{16^2+7.5^2-2(16)(7.5)\cos\frac{2\pi}{7}}+(16-7.5)$ or for $16\times\frac{2\pi}{7}$ seen |
| | 35.6 or 35.6 to 35.614 | **A1** | |
| 6(b) | $\frac{1}{2}\times16^2\times\frac{2\pi}{7}-\frac{1}{2}\times16\times7.5\times\sin\left(\frac{2\pi}{7}\right)$ oe | **M2** | **M1** for either $\frac{1}{2}\times16^2\times\frac{2\pi}{7}$ or $\frac{1}{2}\times16\times7.5\times\sin\left(\frac{2\pi}{7}\right)$ |
| | 68[.0] or 67.98 to 68.0 | **A1** | |
| 7(a) | $\frac{dy}{dx}=3x^2-8x+6$ | **B1** | |
| | Finds *their* $\left.\frac{dy}{dx}\right\|_{x=3}$ | **M1** | condone one slip |
| | $m_{T_1}=9$ | **A1** | |
| | $y-8=$ *their* $9(x-3)$ or $y=9x+c$ and $8=9(3)+c$ | **M1** | |
| | $y=9x-19$ cao | **A1** | |
| 7(b)(i) | $m_{T_2}=\frac{1}{\text{their}\,9}$ | **B1** | **FT** *their* 9 |
| 7(b)(ii) | [Uses $y=x$ in *their* ( $y=9x-19$) to form] *their* ( $x=9x-19$) or *their* ( $y=9y-19$) oe and solves for $x$ or $y$<br><br>or solves e.g. *their* $(9x-19)=$ *their* $\frac{x+19}{9}$ | **M1** | |
| | $\left(\frac{19}{8},\frac{19}{8}\right)$ oe | **A1** | **FT** equal $x$ and $y$ coordinates providing at least 3 marks earned in **(a)** |
| 8(a)(i) | 479 001 600 oe | **B1** | |
| 8(a)(ii) | $3\times10!\times4$ oe | **M1** | |
| | 43 545 600 oe | **A1** | |