| Question | Answer | Marks | Partial Marks |
|---|---|---|---|
| 4 | $m_{AB} = \frac{-9-3}{6--4}$ oe isw or $-\frac{6}{5}$ | **M1** | |
| | $[m_{\perp} =]\ \frac{5}{6}$ or $\frac{-1}{\text{their } m_{AB}}$ | **M1** | **FT** *their* $m_{AB}$ providing that $\frac{\text{difference in } y}{\text{difference in } x}$ attempted |
| | [Midpoint] $\left(\frac{-4+6}{2}, \frac{3-9}{2}\right)$ oe isw or $(1, -3)$ | **M1** | |
| | Finds equation of perpendicular bisector: $y - \text{their } (-3) = -\frac{1}{\text{their}\left(-\frac{6}{5}\right)}(x - \text{their } 1)$ oe | **M1** | **FT** *their* perpendicular gradient providing gradient is $\frac{-1}{\text{their } m_{AB}}$ and using *their* midpoint<br><br>*Their* midpoint must not be any of $A$, $B$, $C$ or $D$ |
| | $11x - 75 = \frac{5}{6}x - \frac{23}{6}$ | **M1** | Eliminates one variable<br>**dep** on previous **M** mark<br>$11x - 75$ = *their* perp bisector equation |
| | $E(7, 2)$ | **A1** | |
| | [Area $CDE$ =] 40 | **A1** | Dependent on all previous marks |
| 5 | $\frac{dy}{dx} = 2x\tan\frac{x}{2} + \frac{x^2}{2}\sec^2\frac{x}{2}$ oe | **2** | **B1** for $\frac{d}{dx}\left(\tan\frac{x}{2}\right) = \frac{1}{2}\sec^2\frac{x}{2}$ soi<br>or **M1 FT** for a product rule of correct structure with *their* $\frac{d}{dx}\left(\tan\frac{x}{2}\right)$ |
| | $\frac{\delta y}{h} = \text{their}\left.\frac{dy}{dx}\right\|_{x=\frac{\pi}{3}}$<br>or<br>$\text{their}\left.\frac{dy}{dx}\right\|_{x=\frac{\pi}{3}} \times h$ | **M1** | Correct small changes relationship |
| | $1.94h$ | **A1** | Dependent on **B2** |
| 6(a) | $(3x + 2)^{10}$ oe | **M2** | **M1** for $(3x + 2)^2$ soi |
| | $1024 + 15\,360x + 103\,680x^2$ | **A2** | **A1** for any two terms correct or $2^{10} + 10(2^9)(3x) + 45(2^8)(3x)^2$ or for 3 correct terms seen but not summed e.g. a list<br><br>After **M2 A0**, allow **SC1** for an answer of $59\,049x^{10} + 393\,660x^9 + 1\,180\,980x^8$ |

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