

| Q | Marking instructions | AO | Mark | Typical solution |
|----|---|------|----------|---|
| 11 | Replaces $h = 0$ with $h \rightarrow 0$ or better seen anywhere | 2.3 | M1 | <p>For gradient of curve at A, let $h \rightarrow 0$ then</p> $\frac{\cos(h)-1}{h} \rightarrow 0 \text{ and } \frac{\sin(h)}{h} \rightarrow 1$ <p>Hence the gradient of the curve at A is given by</p> $\sin\left(\frac{\pi}{2}\right) \times 0 + \cos\left(\frac{\pi}{2}\right) \times 1 = 0$ |
| | Uses limit notation fully correctly Accept $\frac{\sin(h)}{h} \rightarrow 0$ here Accept full limit notation here | 2.5 | A1 | |
| | $\frac{\sin(h)}{h} = 1$ seen OE eg $\sin(h) = h$ | 2.3 | B1 | |
| | Writes last line explicitly as $\sin\left(\frac{\pi}{2}\right) \times 0 + \cos\left(\frac{\pi}{2}\right) \times 1 = 0$ Accept $1 \times 0 + 0 \times 1 = 0$ | 2.2a | B1 | |
| | Total | | 4 | |