# January 2012 International GCSE Mathematics (4PM0) Paper 02 Mark Scheme

| Question | Scheme | Marks |
|---|---|---|
| **1** | (a) $x_R = \frac{4\times 2+10\times 1}{3}, \quad y_R = \frac{6\times 2-3\times 1}{3}$<br>$\overrightarrow{OR} = 6\mathbf{i}+3\mathbf{j}$ | M1 (either)<br>A1 (both) |
| | (b) $\frac{9}{4}\text{Area } \Delta SRQ = \text{area } \Delta ORQ$<br>$3\text{Area } \Delta ORQ = \text{area } \Delta OPQ$<br>$\frac{9}{4}\times 3\text{Area } \Delta SRQ = \text{area } \Delta OPQ$<br>$\lambda = \frac{27}{4}$ oe (exact) | M1<br>M1<br>M1<br>A1 |
| **2** | (a) $VA^2 = 12^2+5^2, \quad VA = 13$ cm | M1,A1 |
| | (b) $P$ is the mid-point of $AB$<br>Identify the required angle<br>$VP^2 = 13^2-2.5^2$ ALT $PX^2 = 5^2-2.5^2$<br>$\sin\theta = \frac{12}{\sqrt{13^2-2.5^2}}$ ALT $\tan\theta = \frac{12}{\sqrt{5^2-2.5^2}}$<br>$\theta = 70.2°$ | B1<br>M1<br>M1<br>A1 |
| **3** | $x+7 = 3+6x-x^2$<br>$x^2-5x+4 = 0$<br>$(x-1)(x-4) = 0$<br>$x=1 \quad y=8$<br>$x=4 \quad y=11$<br>points are $(1,8) \quad (4,11)$ | M1<br>A1<br>M1dep<br>A1<br>A1 |