

Question		Answer	Marks	AO	Guidance
3	(a)	<p>DR</p> <p>Attempt process for finding 2 critical values of $x-2 \leq 2x-6$</p> <p>Obtain 4</p> <p>Obtain $\frac{8}{3}$</p> <p>$x \geq 4$ or $x \leq \frac{8}{3}$</p>	<p>M1</p> <p>A1</p> <p>A1</p> <p>A1</p>	<p>1.1a</p> <p>1.1</p> <p>1.1</p> <p>2.5</p>	<p>Either squaring both sides to obtain 3 terms on each side $(x^2 - 4x + 4 \leq 4x^2 - 24x + 36)$, simplifying and attempting to find two critical values (condone writing down roots from their quadratic without working)</p> <p>Award whether given as $x = 4$ or $x \leq 4$ or $x \geq 4$ or ...</p> <p>Award whether given as $x = \frac{8}{3}$ or $x \leq \frac{8}{3}$ or $x \geq \frac{8}{3}$ or ...</p> <p>Correct notation and must see 'or' (do not accept 'and' or a comma) - one or more strict inequality signs is A0</p> <p>Accept if in either correct set or interval notation e.g. $\{x : x \geq 4\} \cup \{x : x \leq \frac{8}{3}\}$ or $(-\infty, \frac{8}{3}] \cup [4, \infty)$</p> <p>SC: If no DR (e.g. sketch and/or answers only) so M0 then award B1 only for both correct answers $x \geq 4$ or $x \leq \frac{8}{3}$</p> <p>(DR requires a detailed and complete analytical method)</p>
			[4]		

3	(b)	Refers to translation and stretch <u>Either</u> State translation in (positive) x -direction by 4 (units) State stretch by scale factor 0.5 in x -direction	M1	1.2	In either order; ignore details here; allow any equivalent wording (such as move or shift for translation) to describe geometrical transformations but not statements such as add 4 to x (do not accept ‘enlargement’ or ‘shear’ for stretch)	SC: if M0 but details of one correct (including correct order if req.), award B1 for 1/3 (in <u>Either</u> , <u>Or 1</u> , <u>Or 2</u> cases)
			A1	1.1	Or state translation by $\begin{pmatrix} 4 \\ 0 \end{pmatrix}$; accept horizontal to indicate direction or parallel to the x -axis; term ‘translate’ or ‘translation’ needed for award of A1	Do not accept ‘in/on/across /up/along the x axis’ or ‘to the right’ only A0 for SF 4
			A1	1.1	Or parallel to x -axis or horizontally; term ‘stretch’ needed for award of A1; these two transformations must be in this order – if details correct for M1A1A1 but order wrong, award M1A1A0	Allow ‘factor’ or ‘SF’ for ‘scale factor’. Do not accept ‘in/ on/ across/ up/ along the x axis’, ‘in the positive x -direction’, ‘SF 0.5 units’
			[3]			
		Or 1 State stretch by scale factor 0.5 in x -direction	A1		or parallel to x -axis; ‘stretch’ needed for A1	
		State translation in (positive) x -direction by 2 (units)	A1 [3]		Or state translation by $\begin{pmatrix} 2 \\ 0 \end{pmatrix}$; these two transformations must be in this order – if details correct for M1A1A1 but order wrong, award M1A1A0	Same conditions for Or 1 and Or 2 as for <u>Either</u> for acceptable terminology
		<u>Or 2</u> State translation in (positive) x -direction by 1 (unit)	A1		Or state translation by $\begin{pmatrix} 1 \\ 0 \end{pmatrix}$ or parallel to x -axis	
		State stretch by scale factor 2 in y -direction	A1 [3]		Or parallel to y -axis and allow vertical; term ‘stretch’ needed for award of A1; these two transformations can be given in either order	Do not accept ‘down’ only