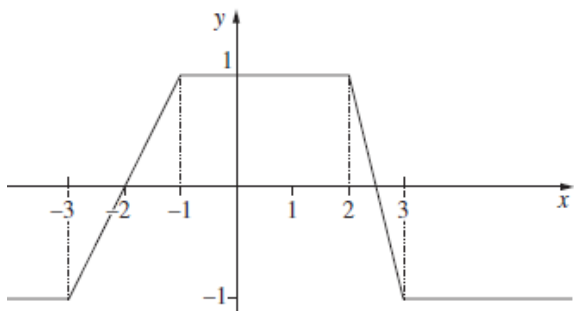
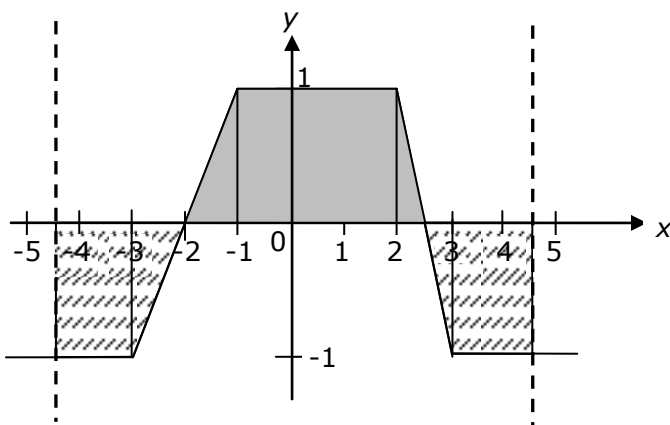


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13	14 d	<p>The diagram shows the graph $y = f(x)$.</p> <p>What is the value of a, where $a > 0$, so that $\int_{-a}^a f(x) dx = 0$.</p> 	1
 <p>Consider the area between the x-axis and the graph $y = f(x)$. Need to find a value of a, such that the area <i>above</i> the x-axis is identical to the area <i>below</i> the x-axis.</p> <p>When $a = 4.5$, $\int_{-4.5}^{4.5} f(x) dx = 0$.</p> <p>$\therefore a = 4.5$</p>		<p>OR: Firstly, $\int_{-3}^{-1} f(x) dx = 0$ and $\int_2^3 f(x) dx = 0$.</p> <p>Now, as $\int_{-1}^2 f(x) dx = 3$, so</p> $\int_{-4.5}^{-3} f(x) dx + \int_3^{4.5} f(x) dx = 3.$ <p>$\therefore a = 4.5$</p> <div style="text-align: right; border: 1px solid black; padding: 2px;">State Mean: 0.12/1</div>	

* These solutions have been provided by [projectmaths](#) and are not supplied or endorsed by the Board of Studies

Board of Studies: Notes from the Marking Centre

Candidates cancelled out the triangular areas, and then calculated the areas above and below using rectangles. In many cases, they included a diagram.

Common problems were:

- taking the areas above the x -axis as negative areas
- including inequalities such as $-2 < a < 3$ when the question asked 'what is the value of a '.

Source: http://www.boardofstudies.nsw.edu.au/hsc_exams/