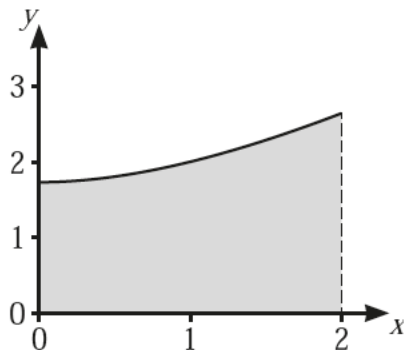


- 3 The diagram shows part of the curve with equation $y = \sqrt{x^2 + 3}$, between $x = 0$ and $x = 2$.



- (a) (i) Use the trapezium rule, with intervals of 0.5, to determine an approximation to the area of the shaded region. [3]
- (ii) Use rectangles with the same intervals as in part (i) to determine lower and upper bounds for the exact area of the shaded region. [2]
- (b) Write an expression for the exact area of the shaded region in terms of a limit, involving x and intervals of width δx . [2]