Marked example 3

Paper 2 style · Graphic display calculator

3 6 marks AHL 2.15 ●●○ Typical

Consider the graphs of $y = |x^2 - 4|$ and $y = 2x + 1$.

(a) Find the coordinates of the points of intersection of the two graphs. **[2]**

(b) Hence solve the inequality $|x^2 - 4| \geq 2x + 1$. **[2]**

(c) Find the exact value of the larger x-coordinate in part (a). **[2]**

MARKSCHEME (a)

$(1, 3)$ and $(3.45, 7.90)$ **A1A1**

Total 2 marks

MARKSCHEME (b)

$x \leq 1$ or $x \geq 3.45$ **A1A1**

Total 2 marks

MARKSCHEME (c)

$x^2 - 4 = 2x + 1,\ x^2 - 2x - 5 = 0$ **M1**

$x = 1 + \sqrt{6}$ **A1**

Total 2 marks

Note For $x > 2$ the modulus is $x^2 - 4$ itself.

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