Marked example 2

Paper 1 style · No calculator

2 6 marks SL 5.11 ●●○ Typical

The graphs of $y = x^2 - 2x$ and $y = x$ intersect at the origin O and at the point P.

(a) Find the x-coordinate of P. **[2]**

(b) Find the area of the region enclosed by the two graphs. **[4]**

MARKSCHEME (a)

$x^2 - 2x = x \Rightarrow x(x-3) = 0$ **(M1)**

$x = 3$ **A1**

Total 2 marks

MARKSCHEME (b)

$\int_0^3 (x - (x^2 - 2x))\,\mathrm{d}x$ **M1**

$= \int_0^3 (3x - x^2)\,\mathrm{d}x = \left[\frac{3x^2}{2} - \frac{x^3}{3}\right]_0^3$ **A1**

$= \frac{27}{2} - 9$ **A1**

$= \frac{9}{2}$ **A1**

Total 4 marks

Note The line is on top between 0 and 3: test $x = 1,\ 1 > -1$.

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