

The diagram shows part of the curve $y = 1 - 2x - (1 - 2x)^3$ intersecting the *x*-axis at the origin *O* and at $A(\frac{1}{2}, 0)$. The line *AB* intersects the *y*-axis at *B* and has equation y = 1 - 2x.

Show that AB is the tangent to the curve at A.	[4]

(ii)	Show that the area of the shaded region can be expressed as $\int_0^{\frac{1}{2}} (1 - 2x)$	3 dx. [2]
(iii)	Hence, showing all necessary working, find the area of the shaded region	on. [3]