7 **(a)*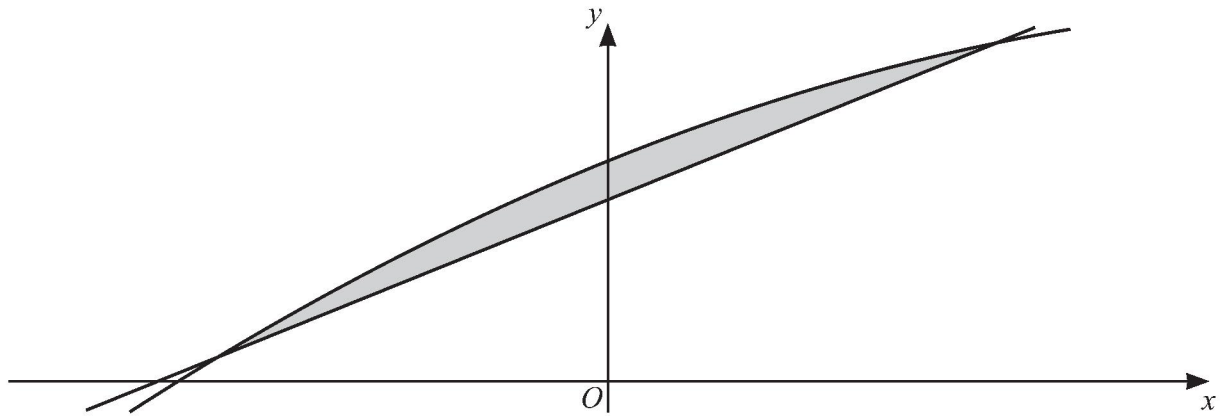* By expressing $-2x^2 + 8x + 11$ in the form $-a(x-b)^2 + c$, where a, b and c are positive integers, find the coordinates of the vertex of the graph with equation $y = -2x^2 + 8x + 11$. [3]

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(b)

The diagram shows part of the curve with equation $y = -2x^2 + 8x + 11$ and the line with equation $y = 8x + 9$.

Find the area of the shaded region. [5]

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