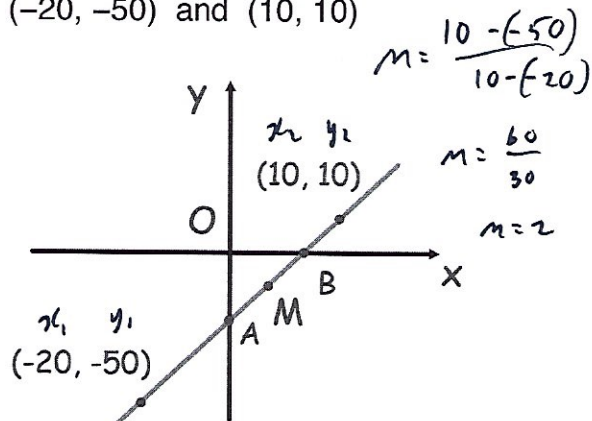


15th February



Corbettmaths

The line below passes through the point $(-20, -50)$ and $(10, 10)$



M is the midpoint of A and B.

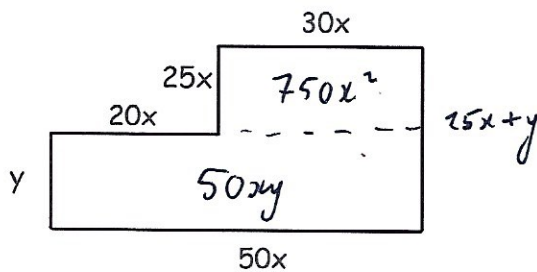
Find the coordinates of the point M.

$$y = 2x - 10$$

$$A(0, -10) \quad B(5, 0)$$

$$(2.5, -5)$$

The line meets the y-axis at the point A and the x-axis at the point B.



Show that $y = 105 - 75x$

$$P = 210$$

$$150x + 2y = 210$$

$$2y = 210 - 150x$$

$$y = 105 - 75x$$

The perimeter of this shape is 210cm

The area of the shape is $A \text{ cm}^2$

$$P = 50x + 20x + 25x + 30x + 25x + y + y$$

$$P = 150x + 2y$$

Show that $A = 5250x - 3000x^2$

$$50xy + 750x^2$$

$$50x(105 - 75x) + 750x^2$$

$$5250x - 3750x^2 + 750x^2$$

$$A = 5250x - 3000x^2$$

Use differentiation to work out the maximum value of A as x varies. $\frac{dA}{dx} = 0$

$$\frac{dA}{dx} = 5250 - 6000x$$

$$0 = 5250 - 6000x$$

$$x = 0.875$$

$$A = 2296.875 \text{ cm}^2$$