12th October

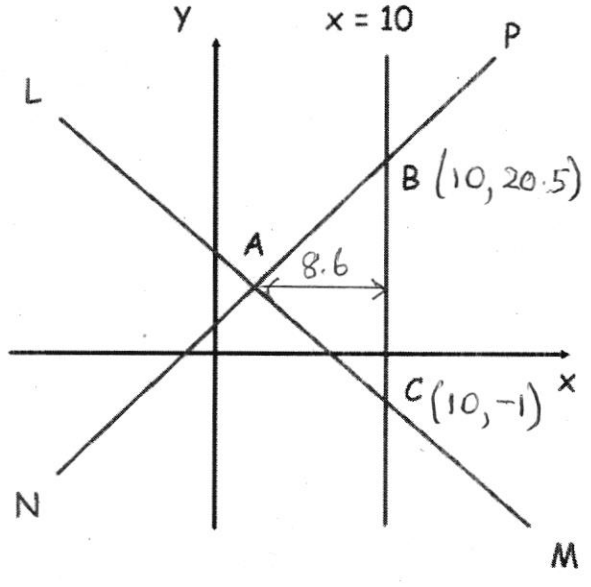
Corbettmaths

Solve the inequality $\frac{3-8x}{9} > -14$

$3-8x > -126$

$129 > 8x$

$x < \frac{129}{8}$



The lines LM and NP are perpendicular
The line NP has equation $2y - 4x = 1$
A is the point with coordinates $(1.4, 3.3)$

Find the area of triangle ABC.

At B $2y - 40 = 1 \Rightarrow y = 20.5$

NP: $y = 2x + \frac{1}{2} \Rightarrow m_{\perp} = -\frac{1}{2}$

LM: $y - 3.3 = -\frac{1}{2}(x - 1.4)$

At C $y - 3.3 = -\frac{1}{2}(10 - 1.4)$

$\Rightarrow y = -1$

$\Rightarrow BC = 21.5$

Area $= \frac{1}{2} \times 21.5 \times 8.6 = 92.45$

Prove that every term in the sequence $n^2 - 8n + 28$ is positive

$n^2 - 8n + 28 = (n-4)^2 - 16 + 28$

$= (n-4)^2 + 12 \geqslant 12 > 0.$

A curve has equation
$y = 20 + 3x^2 - 5x^3$

Find the values of x for which
$y = 20 + 3x^2 - 5x^3$ is an decreasing function.

$\frac{dy}{dx} = 6x - 15x^2$

Decreasing $\Rightarrow 6x - 15x^2 < 0$

$\Rightarrow 3x(2 - 5x) < 0$

$\Rightarrow x < 0, \; x > \frac{2}{5}$