Grade 9 Mathematics Worksheet

Inequalities, equations and area

Questions:

1. Given the inequality $y < 2x - 5$

   a) Does the point $(3;5)$ lie in the solution set to this inequality?

   b) For which values of *x* will $-1 < 2x - 5 < 3$

   c) Calculate the area between the graph of $y = 2x - 5$ and the positive *x* axis, the line $x = 5$ and the *y* axis

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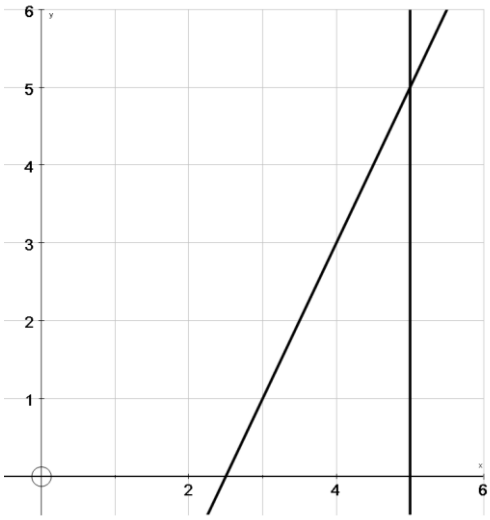
Solution:

1. a) If $x = 3$, then $y = 2(3) - 5 = 1$. So the point $(3;5)$ does not lie in the solution set of $y < 2x - 5$ as the y value must be smaller than 1 to lie in the solution set

$$-1 < 2x - 5 < 3$$
$$\therefore -1 + 5 < 2x - 5 + 5 < 3 + 5$$

b) $$\therefore 4 < 2x < 8$$
$$\therefore \frac{4}{2} < \frac{2x}{2} < \frac{8}{2}$$
$$\therefore 2 < x < 4$$

c)



The base of the triangle will be 5 – 2½ = 2½. The height of the triangle is 5 units.
So the area will be : $\frac{1}{2} base \times height = \frac{1}{2}\left(\frac{5}{2}\right)(5) = \frac{25}{4} units^2$

The principal of doing to one side what one does to the other side applies here and must be emphasised.