Problem sheet 1

(1) Express $2/9$ as a repeating decimal, using a bar to indicate repeating digits.

(2) Express $0.\overline{127}$ as a fraction.

(3) Find all x satisfying each of the following equations and inequalities:

   (a) $|2x + 5| = 4$

   (b) $\left|2 - \frac{x}{2}\right| < \frac{1}{2}$

   (c) $|x - 3| < 2|x|$

   (d) $|x - 1| = 1 - x$.

(4) Show that the inequality $|a - b| \geq \left||a| - |b|\right|$ holds for all real numbers a and b.

(5) Describe the graph of the inequality $y < x^2$.

(6) Find the equation for the vertical line passing through a point (p, q).

(7) Find the equation for a line passing through $(-2, 2)$ with slope $1/2$.

(8) Does the point $(3, -1)$ lie on, above or below the line $x - 4y = 7$?

(9) Write an equation for the line which passes through $(-2, 0)$ and $(0, 2)$.