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A-Level Core Edexcel | Past Exam Question | January 2013 Q6(c)

Find the coordinates of the points of intersection of $y = \frac{2}{x} - 5$ and $y = 4x + 2$

$y = \frac{2}{x} - 5$ ①	$\therefore 4x - 1 = 0$ or $x + 2 = 0$
$y = 4x + 2$ ②	$\therefore x = \frac{1}{4}$ or $x = -2$
Sub ① into ②	Sub $x = \frac{1}{4}$ into ②
$\therefore \frac{2}{x} - 5 = 4x + 2$	$y = 4\left(\frac{1}{4}\right) + 2$
$\therefore 2 - 5x = 4x^2 + 2x$	$= 3$
$\therefore 4x^2 + 7x - 2 = 0$	Sub $x = -2$ into ②
$\therefore (4x - 1)(x + 2) = 0$	$\therefore y = 4(-2) + 2$
	$= -6$
	\therefore Points of intersection $\left(\frac{1}{4}, 3\right), (-2, -6)$ ▶

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