

Math 587 Assignment 2

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1. At what point does the line $2x - y = 3$ intersect the line $x + 2y = -1$?

Solution. The point of intersection may be obtained by solving the two equations simultaneously. For this multiply the first equation by 2 and add that to the second equation obtaining the equation

$$5x = 5 .$$

Thus, $x = 1$, and, using either of the two original equations, one finds $y = -1$. The required point is $(1, -1)$.

2. Find all solutions of the quadratic equation $x^2 - x - 12 = 0$.

Solution. The well known formula for solution of the quadratic equation $ax^2 + bx + c = 0$ is

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} .$$

In this case one finds

$$x = \frac{1 \pm \sqrt{1 - 4(1)(-12)}}{2} = \frac{1 \pm 7}{2} = 4 \text{ or } -3 .$$