Math 587 Assignment 2
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1. At what point does the line $2x - y = 3$ intersect the line $x + 2y = -1$?[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

   $$ax^2 + bx + c = 0 \tag{1}$$

   is

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

   In this case one finds

   $$
   \begin{aligned}
   x &= \frac{1 \pm \sqrt{1 - 4(1)(-12)}}{2} \tag{3}\\
   &= \frac{1 \pm 7}{2} \tag{4}\\
   &= 4 \text{ or } -3 \ . \tag{5}
   \end{aligned}
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[1] This exercise is at the level of "middle school" mathematics in the United States.