

# Math Diversion Problem 603

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Theory like mist on eyeglasses — obscures facts.  
— Charlie Chan

The YouTube video is found at:

Source: ???

Title: ???

Presenter: GRE Practice: Manhattan Review

## 1 The Problem

Given the relations

$$x - 2y = 3, \tag{1a}$$

$$x^2 - 4xy = 5, \tag{1b}$$

find the real values of  $x$  and  $y$ . Note: some of the original information may be missing.

## 2 The Solution

First, square (1a) then then subtract (1b) from it:

$$x^2 - 4xy + 4y^2 = 9, \tag{2a}$$

$$x^2 - 4xy = 5, \tag{2b}$$

to get

$$4y^2 = 4. \tag{3}$$

This has solutions

$$y = +1, -1. \tag{4}$$

Corresponding  $x$  values will be

$$x = 5, 1. \tag{5}$$