Hi all! My friend, Tarek, PM me and asked me to show how to use the graphic approach to problem with inequalities. I really love such approach because it is not only fast one after training, but also reliable. So, I try to illustrate how to use it.

1) If $(x/y)>2$, is $3x+2y<18$?

(1) $x-y$ is less than 2
(2) $y-x$ is less than 2

1. First of all, we draw x/y>2. x/y=2 - is a boundary. (see figure 1). we should note that if one of the variables is negative and other is positive, x/y will be always negative and less than 2. Therefore, our set of x,y that satisfied x/y>2 lies between line x/y=2 and x-axis.

2. Next, we draw our main inequality: 3x+2y<18. 3x+2y=18 - is a boundary. (see figure 2).

3. Now, we should combine our main inequality with the restriction, x/y>2. (see figure 3). Eventually, we defined two areas (sets) were the main inequality is TRUE and were it is FALSE. Two lines intersect in point P with coordinates: (4.5;2.25).

4. Let's consider fist condition: x-y<2. x-y=2 is a boundary. (see figure 4). As we can see all y,x that satisfies the fist condition lie in "green-TRUE" region. Therefore, the first statement is sufficient to answer the question. We should be careful and check where line x-y=2 passes point P, through left side or right side. We can put y=2.25 into x-y=2 and find that x=4.25<4.5 (left side). In other words, line x-y=2 passes y=2.25 (y-coordinate of P) early and goes above P.

5. Finally, let's check last condition: y-x<2. y-x=2 is a boundary. (see figure 5). As we can see all y,x that satisfies the second condition lie in both "green-TRUE" and "red-FALSE" regions. Thus, the second condition is insufficient.

So, answer is A

This approach took less than 2 minutes.

Tips:

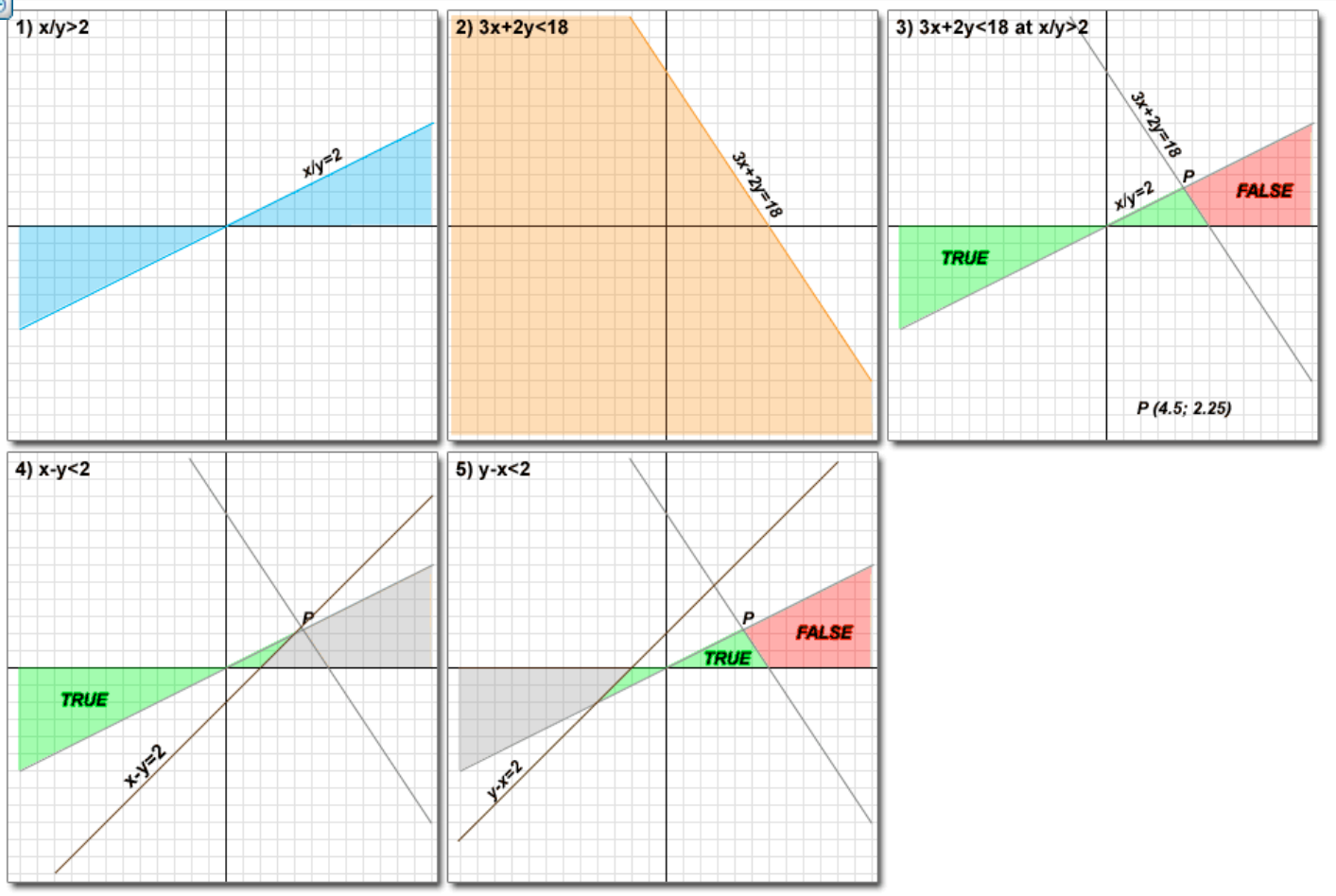
1) How fast can we draw a line, for example 3x+2y=18? Simple approach: we need two points to draw line, let's choose intersections with x- and y- axes.
x=0 (intersection with y-axis) --> y=9; y=0 (intersection with x-axis) --> x=6.

2) Let's suppose we have a linear inequality, such as 38y-11x>121, suppose we've already drawn the line. How can we find what side is "true" and what side is "false"? The fastest method is just use y=0,x=-infinity. In our case, 0-(-infinity)=infinity>121 - true. Therefore, we take a left side.

see also: http://gmatclub.com/forum/7-t75657

That's all
Regards,
Serg a.k.a. Walker

Attachment:



tarek99.png [17.04 KiB | Viewed 9007 times]

see also post by Nach0: Quick Way to Graph Inequalities