

Math 6c, homework 24



1. Write as a polynomial:

a.  $(x^3 - y)^2$ ;

b.  $(a^3 + ab)^2$ ;

c.  $(3p^2 - 2q^3)^2$

d.  $(2a + b)(2a - b)$ ;

e.  $(5x + 4y)(4y - 5x)$ ;

d.  $(5m + 8n)(8n - 5m)$ ;

2. Plot the graph of a functions:

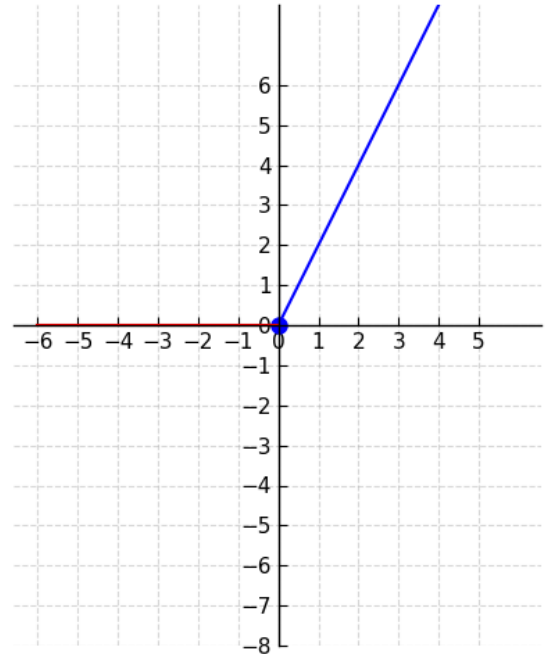
Example:  $y = |x| + x$

If  $x \geq 0$ ,  $|x| = x$ , and for these  $x$ ,  $y = x + x = 2x$

If  $x < 0$ ,  $|x| = -x$ , and for these  $x$ ,  $y = -x + x = 0$ ,  
therefore,

$$y = |x| + x \Rightarrow y = \begin{cases} 2x, & \text{if } x \geq 0 \\ 0, & \text{if } x < 0 \end{cases}$$

Piecewise Function:  $y = 2x$  for  $x \geq 0$ ,  $y = 0$  for  $x < 0$



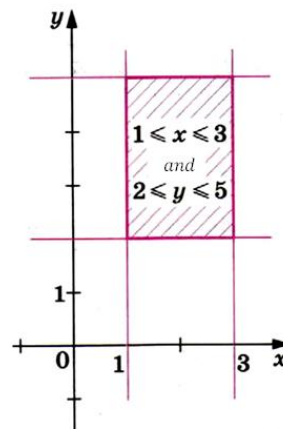
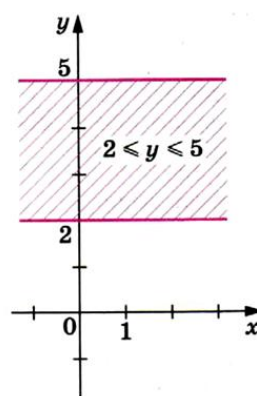
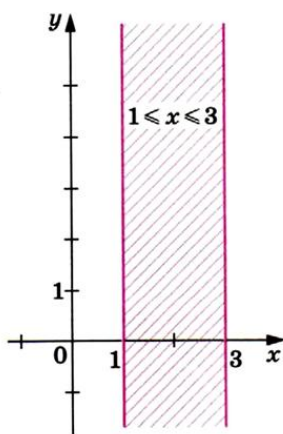
a.  $y = |x| - x$ ;

b.  $y = |x| \cdot x$ ;

c.  $y = \frac{|x|}{x}$ ;

d.  $y = \frac{2x}{|x|}$ ;

3. Take a look on a picture below.



Shaded area represents all points with coordinates  $(x, y)$  that satisfy the given inequalities. For example, all the points shaded in the first picture have coordinates where  $y \in (-\infty, +\infty)$ , and

$x \in [1,3]$ . (All  $y$  belong to the interval from minus infinity to plus infinity, in other words, they can be any real number; but  $x$  is limited to the interval from 1 to 3, with 1 and 3 included.)

On a coordinate plane show all the points that satisfy inequalities:

a.  $x \leq 1$ ;      b.  $y \geq -2$ ;      c.  $-4 \leq x \leq 4$ ;      d.  $-2 \leq y \leq 2$

e. all the points, that belong to a square with the side length 3 and whose diagonals intersect at the point  $(0,0)$ .

4. Describe the areas shown in the picture using inequalities:

