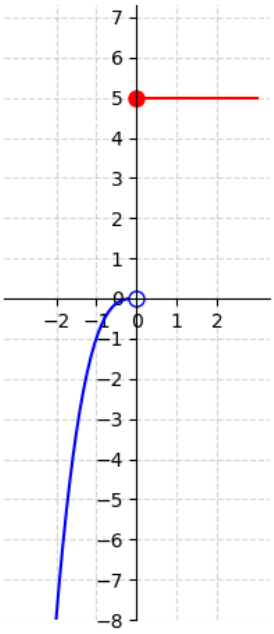
Math 6c, homework 23 (see classwork for references)

1. Plot the graph of a function, if the function if function define as:

Example: $y = \begin{cases} x^3, & if\ x < 0 \\ 5, & if\ x \geq 0 \end{cases}$

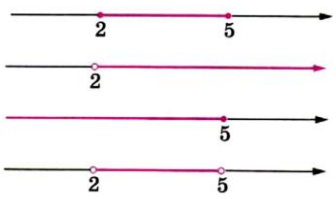


$a.\ y = \begin{cases} x^2, & if\ x \geq 0 \\ -x, & if\ x < 0 \end{cases}$ $b.\ y = \begin{cases} x^2, & if\ x < 0 \\ -x, & if\ x \geq 0 \end{cases}$

$c.\ y = \begin{cases} 3, if\ x \geq 3 \\ x, if\ -3 < x < 3 \\ -3, & if\ x \leq -3 \end{cases}$ $d.\ y = \begin{cases} 3, if\ x \geq 3 \\ |x|, if\ -3 < x < 3 \\ 3, & if\ x \leq -3 \end{cases}$

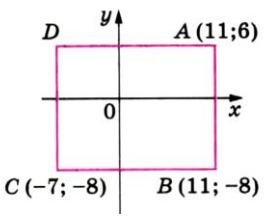
2. For each image of a numerical interval, indicate the corresponding inequality or double inequality.

a.
b.
c.
d.



1) $x \geqslant 2$
2) $2 < x < 5$
3) $x > 2$
4) $x < 5$
5) $2 \leqslant x \leqslant 5$
6) $x \leqslant 5$

3. The polygon in the picture is a rectangle. Find its perimeter and area.



4. Solve the equations:

   $a.\ |2x-5|=11;$ $b.\ |2-x|=5-4x;$ $c.\ \big||2+x|+3\big|=9$

5. Evaluate:

   $a.\ 0.25^{40}\cdot 4^{42};$ $b.\ 2^{100}\cdot\left(\frac{1}{2}\right)^{103};$ $c.\ \left(\frac{3}{4}\right)^{50}\cdot\left(\frac{4}{3}\right)^{49};$ $c.\left(-\frac{2}{3}\right)^{24}\cdot\left(\frac{3}{2}\right)^{23}$

6. Write as a polynomial:

   $a.\ (x^2+3)^2;$ $b.(2y^2-3x^2)^2;$ $c.\ (x^2y^2+1)^2$

7. Write as a squre of the sum:

   $a.\ a^2-6ab+9b^2;$ $b.\ 4x^2+4xy+y^2;$ $c.\ a^2b^2+2ab+1$

8. Fill the empty spaces:

   $a.\ (2x+\cdots)^2=\cdots+\cdots+y^2;$ $b.\ (\ldots+2m)^2=4n^2+\cdots+\cdots;$

   $c.\ (3y-\cdots)^2=\cdots-24y+\cdots;$ $d.\ (\ldots-\cdots)^2=a^2-\cdots+9;$