

Учебный проект

Рисунки в графиках

“В чистом математике живёт
всегда художник: архитектор
и даже поэт”.

Принсгейм

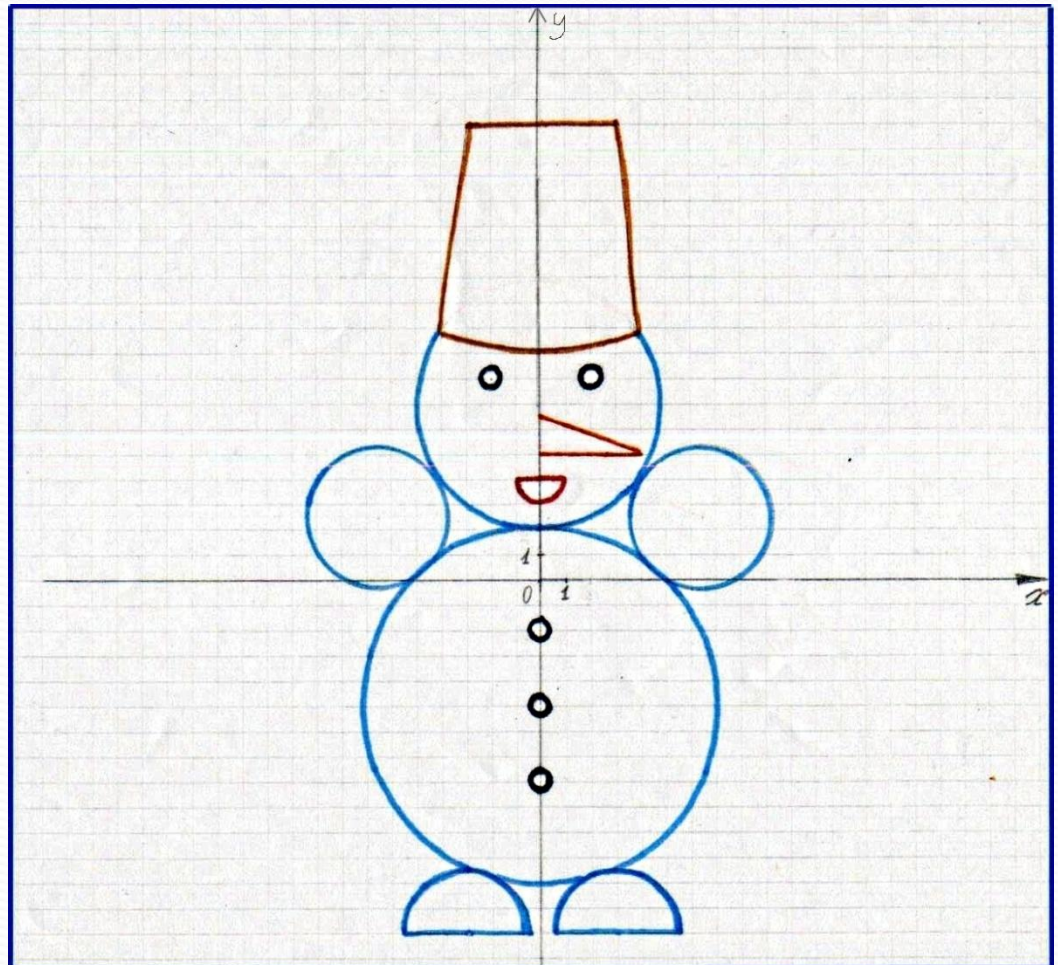
Цель работы: изучить графики функций,
с их помощью попробовать самому
построить рисунки.

Выполнил ученик 8 “А” класса МБОУ
СОШ №159 с углублённым изучением
математики и физики – Машуков
Геннадий

Руководитель: учитель Сарбулатова А.
К.

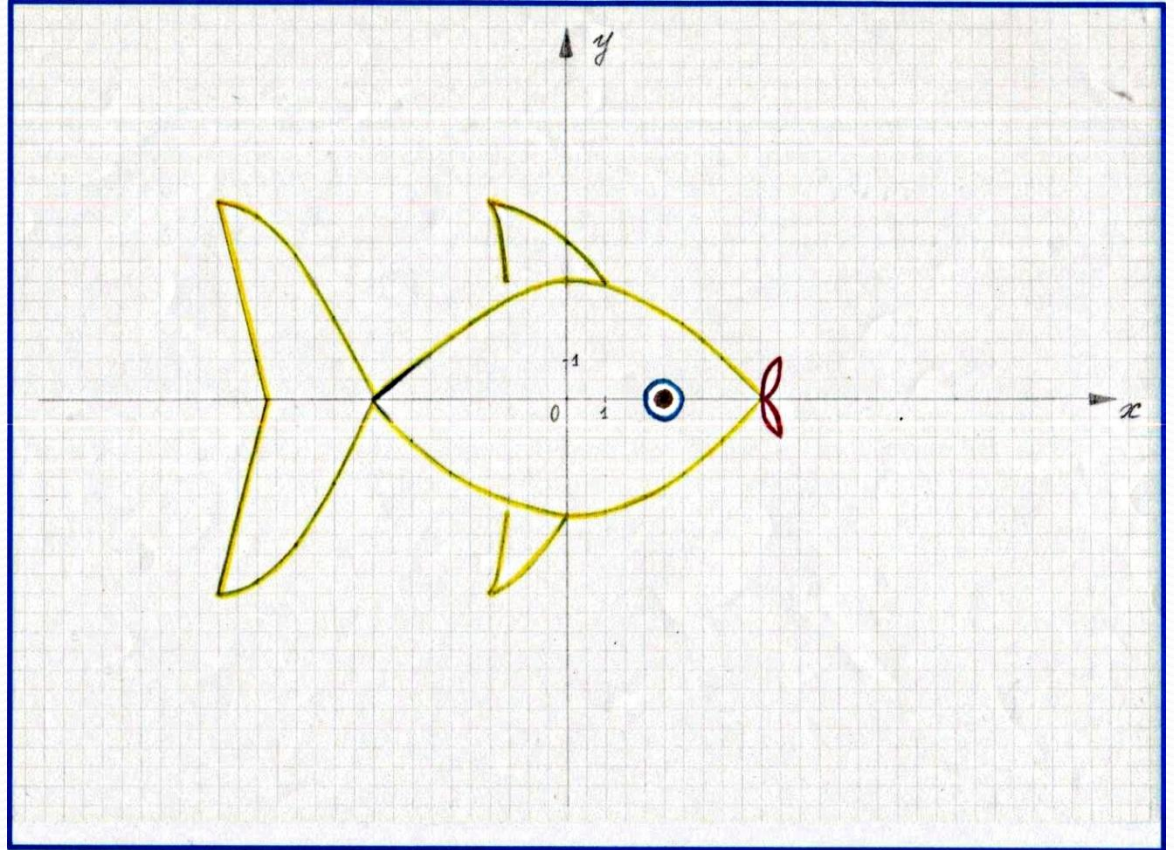
Снеговик

1. $x^2 + (y+5)^2 = 49$
2. $x^2 + (y-7)^2 = 25 \quad y \leq 10$
3. $x^2 + (y-21)^2 = 144 \quad y \leq 10$
4. $(x-6,5)^2 + (y-2,5)^2 = 9$
5. $(x+6,5)^2 + (y-2,5)^2 = 9$
6. $(x+3)^2 + (y+14)^2 = 6,25 \quad y \geq -14$
7. $(x-3)^2 + (y+14)^2 = 6,25 \quad y \geq -14$
8. $x^2 + (y-4)^2 = 1 \quad y \leq 4$
9. $(x+2)^2 + (y-8)^2 = 0,25$
10. $(x-2)^2 + (y-8)^2 = 0,25$
11. $x^2 + (y+2)^2 = 0,25$
12. $x^2 + (y+5)^2 = 0,25$
13. $x^2 + (y+8)^2 = 0,25$
14. $y = -14 \quad x \in [-5,5; -0,5] \cup [0,5; 5,5]$
15. $y = 4 \quad x \in [-1; 1]$
16. $y = 5 \quad x \in [0; 4]$
17. $y = 18 \quad x \in [-3; 3]$
18. $y = 8x + 42 \quad x \in [-4; -3]$
19. $y = 8x - 42 \quad x \in [3; 4]$
20. $y = -0,375x + 6,5 \quad x \in [0; 4]$



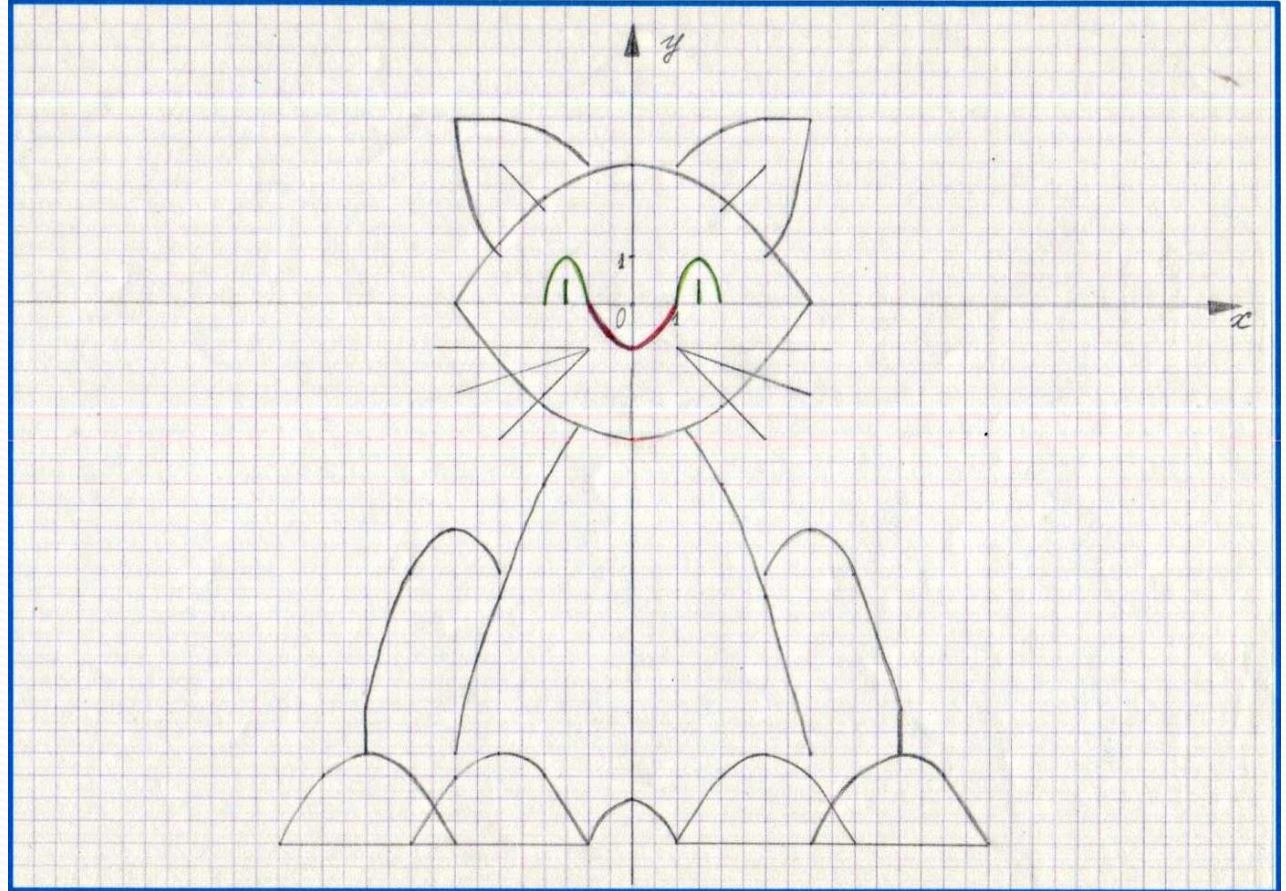
Рыбка

1. $y = 3/25x^2 - 3$ $x \in [-5; 5]$
2. $y = -3/25x^2 + 3$ $x \in [-5; 5]$
3. $y = 8(x+2)^2 - 5$ $x \in [-2; -1,5]$
4. $y = -8(x+2)^2 + 5$ $x \in [-2; -1,5]$
5. $y = 1/2(x+2)^2 - 5$ $x \in [-2; 0]$
- 6.
- 7.
8. $y = 4(x-5,5)^2 - 1$ $x \in [5; 5,5]$
9. $y = 4(x-5)^2$ $x \in [5; 5,5]$
10. $y = -4(x-5,5)^2 + 1$ $x \in [5; 5,5]$
11. $y = -4(x-5)^2$ $x \in [5; 5,5]$
12. $y = 5/16(x+9)^2 - 5$ $x \in [-9; -5]$
13. $y = -5/16(x+9)^2 + 5$ $x \in [-9; -5]$
14. $y = -4x - 31$ $x \in [-9; -7,75]$
15. $y = 4x + 31$ $x \in [-9; -7,75]$



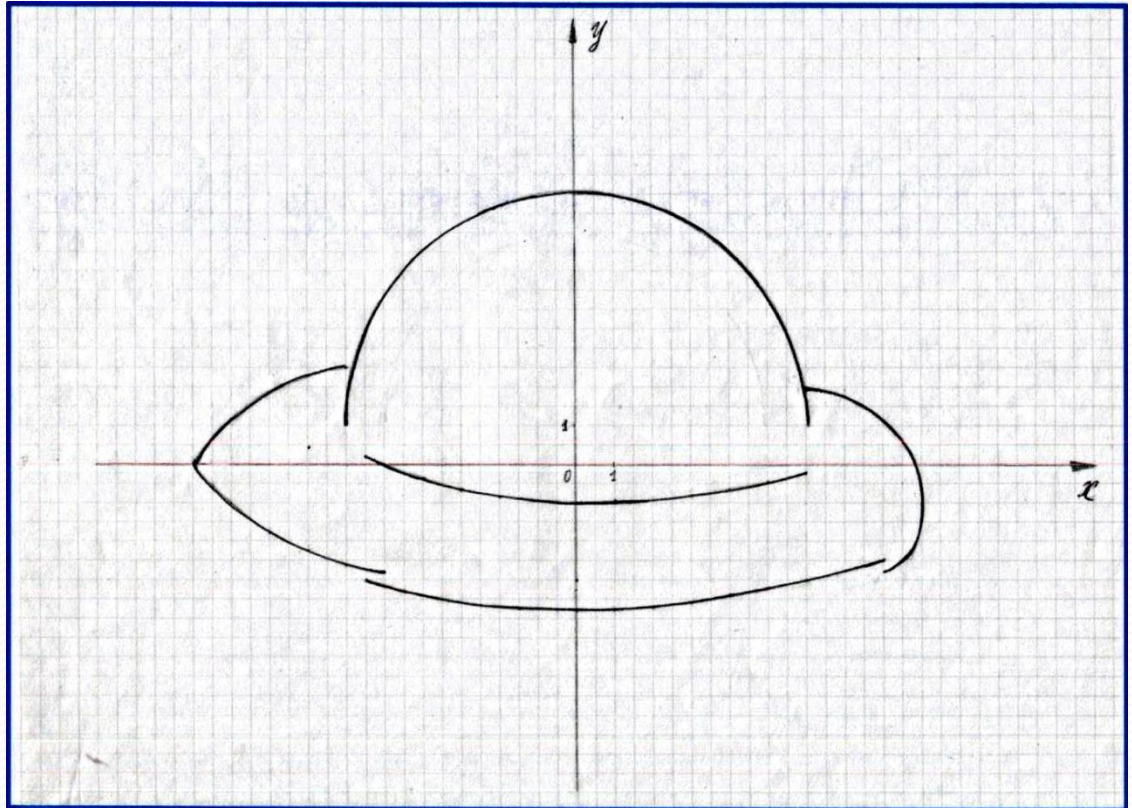
КОТ

1. $y = -1/2x^2 - 2$ $x \in [-4; -1,3] \cup [1,3; 4]$
2. $y = -(x+4)^2 - 5$ $x \in [-6; -3]$
3. $y = -(x-4)^2 - 5$ $x \in [3; 6]$
4. $x = 6$ $y \in [-9; -10]$
5. $x = -6$ $y \in [-9; -10]$
6. $y = -1/2(x+6)^2 - 10$ $x \in [-8; -4]$
7. $y = -1/2(x-6)^2 - 10$ $x \in [4; 8]$
8. $y = -1/2(x+3)^2 - 10$ $x \in [-5; -1]$
9. $y = -1/2(x-3)^2 - 10$ $x \in [1; 5]$
10. $y = -x^2 - 11$ $x \in [-1; 1]$
11. $y = -12$ $x \in [-8; -1] \cup [1; 8]$
12. $y = 3/16x^2 - 3$ $x \in [-4; 4]$
13. $y = -3/16x^2 + 3$ $x \in [-4; 4]$
14. $y = x^2 - 1$ $x \in [-1; 1]$
15. $y = -4(x+1,5)^2 + 1$ $x \in [-2; -1]$
16. $y = -4(x-1,5)^2 + 1$ $x \in [1; 2]$
17. $y = 3(x+3)^2 + 1$ $x \in [-4; -3]$
18. $y = 3(x-3)^2 + 1$ $x \in [3; 4]$
19. $y = -1/4(x+3)^2 + 4$ $x \in [-3; -1]$
20. $y = -1/4(x-3)^2 + 4$ $x \in [1; 3]$
21. $y = 4$ $x \in [-4; -3] \cup [3; 4]$
22. $y = x$ $x \in [-1; -3] \cup [1; 3]$
23. $y = -x$ $x \in [-3; -2] \cup [1; 3]$
24. $y = -1$ $x \in [-4,5; -1] \cup [1; 4,5]$
25. $y = 1/3x - 2/3$ $x \in [-4; -1]$
 $y = -1/3x - 2/3$ $x \in [1; 4]$
26. $x = -1,5$ $y \in [0; 0,5]$
 $x = 1,5$ $y \in [0; 0,5]$



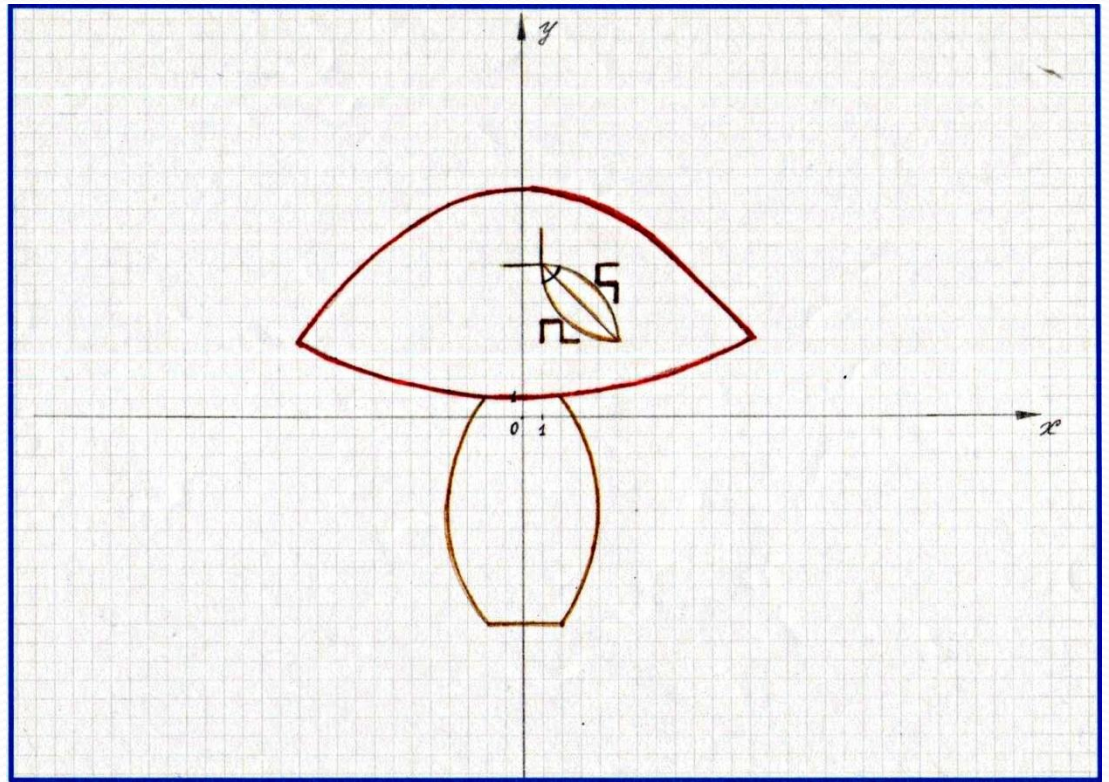
НЛО

1. $x^2+(y-1)^2=36 \quad y \geq 1$
2. $y = 1/25x^2-1 \quad x \in [-5,5;0]$
3. $y = 1/49x^2-1 \quad x \in [0;6]$
4. $y = -5/32(x+6)^2+2,5 \quad x \in [-10;-6]$
5. $y = 14/125(x+5)^2-2,8 \quad x \in [-10;-5]$
6. $(x-6)^2+(y+1)^2=9 \quad x \in [8,7;9]$
7. $y = -0,23(x-6)^2+2 \quad x \in [6;8,75]$
8. $y = 0,025x^2-3,75 \quad x \in [-5,5;0]$
9. $y = 0,02x^2-3,75 \quad x \in [0;8]$
10. $y = 1/2(x-8)^2-2,75 \quad x \in [8;8,75]$



Гриб

1. $(x-6)^2+(y+5)^2 = 100$ $x \in [-4;-2]$
2. $(x+6)^2+(y+5)^2 = 100$ $x \in [2;4]$
3. $y = -11$ $x \in [-2;2]$
4. $y = 1/48x^2+1$ $x \in [-12;12]$
5. $y = -1/48x^2+12$ $x \in [-12;12]$
6. $y = (x-1)^2+7$ $x \in [1;2]$
7. $(x-5)^2+(y-8)^2 = 16$ $x \in [1;5]$ $y \leq 8$
8. $(x-1)^2+(y-4)^2 = 16$ $x \in [1;5]$ $y \geq 4$
9. $y = 4$ $x \in [2;3]$
10. $y = 5$ $x \in [1;2]$
11. $y = 7$ $x \in [4;5]$
12. $Y = 8$ $x \in [4;5] \cup [-1;1]$
13. $x = 1$ $y \in [4;5] \cup [8;10]$
14. $x = 2$ $y \in [4;5]$
15. $x = 4$ $y \in [7;8]$
16. $x = 5$ $y \in [6;7]$
17. $y = -1x+9$ $x \in [1;5]$



Рожица

1. $x^2+(y+1)^2=72,25$ $x \in [-6;4]$ $y \geq 5$
2. $(x+0,5)^2+(y+3)^2=4$ $x \in [-2;0,5]$ $y \geq -1,5$
3. $(x+8)^2+y^2=2,25$ $x \in [-9,5;-8]$
4. $(x-7)^2+(y-2)^2=1$ $x \in [7;8]$
5. $(x+7,5)^2+(y-3,5)^2=2,25$ $x \in [-9;-7,5]$ $y \geq 3,5$
6. $(x+7)^2+(y-3)^2=2,25$ $x \in [-8,5;-7]$ $y \geq 3$
7. $(x-4)^2+(y-5)^2=4$ $x \in [4,5;6]$ $y \geq 5$
8. $(x-4,5)^2+(y-5,5)^2=4$ $x \in [5;6,5]$ $y \geq 6$
9. $(x+4)^2+(y+3)^2=9$ $x \in [-5,5;-3]$ $y \geq -0,5$
10. $(x-3)^2+(y+2)^2=9$ $x \in [1,5;4]$ $y \geq 0,5$
11. $y = -4(x+4,5)^2+1$ $x \in [-5;-4]$
12. $y = -4(x-3)^2+2$ $x \in [2,5;3,5]$
13. $y = -1,3(x+4,5)^2+3$ $x \in [-6;-3]$
14. $y = -1,3(x-3)^2+4$ $x \in [1,5;4,5]$
15. $y = 0,12x^2-4,5$ $x \in [0;3,5]$
16. $y = 0,16x^2-5$ $x \in [0;3,5]$
17. $y = -0,3(x-7,5)^2+9$ $x \in [5,5;12]$
18. $y = -0,3(x-7,5)^2+8$ $x \in [6;11]$
19. $y = -0,65(x-7,5)^2+7$ $x \in [6,5;11]$
20. $y = 0,08(x+1,5)^2-4,5$ $x \in [-4;-1,5]$
21. $y = 1/9(x+1)^2-5$ $x \in [-4;-1]$
22. $y = -4,5$ $x \in [-1,5;0]$
23. $y = -5$ $x \in [-1;0]$
24. $y = -0,49(x+9,5)^2+8$ $x \in [-13;-7,5]$
25. $y = -0,49(x+9,5)^2+6$ $x \in [-13;-8]$
26. $y = -0,49(x+9,5)^2+5$ $x \in [-1;-7]$

