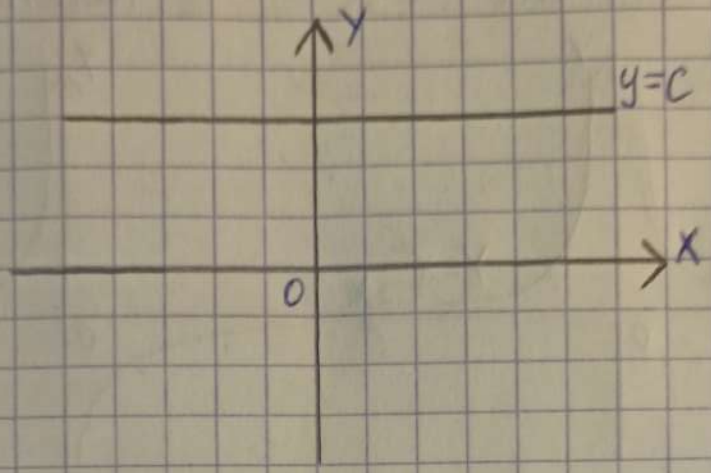
Основные элементарные функции

Графики. D(f), E(f).

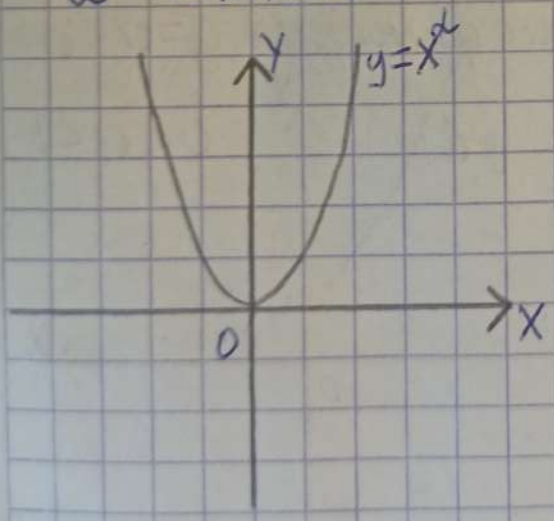
1) постоянная функция $y=C$, C-const



2) степенная функция $y=x^{\alpha}$, $\alpha \in \mathbb{R}$

1° $\alpha \geq 0$

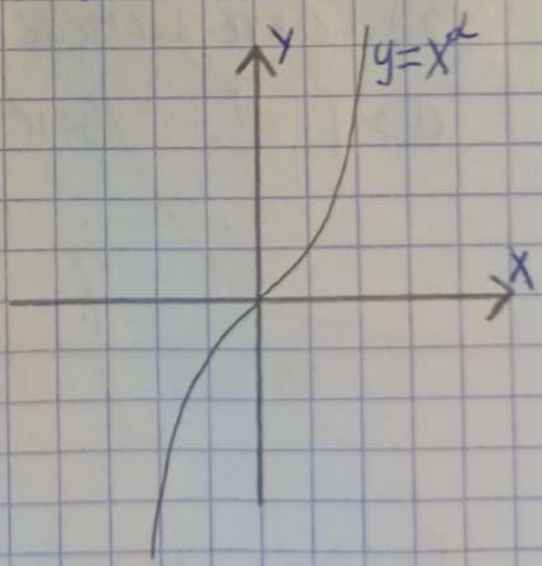
α - чётная



$D(f)=(-\infty;+\infty)$

$E(f)=[0;+\infty)$

α - нечётная

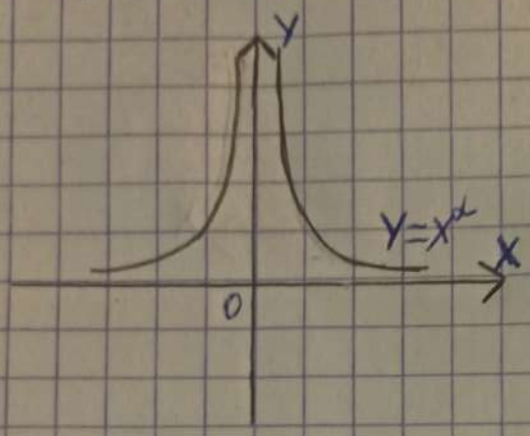


$D(f)=(-\infty;+\infty)$

$E(f)=(-\infty;+\infty)$

2° $\alpha < 0$

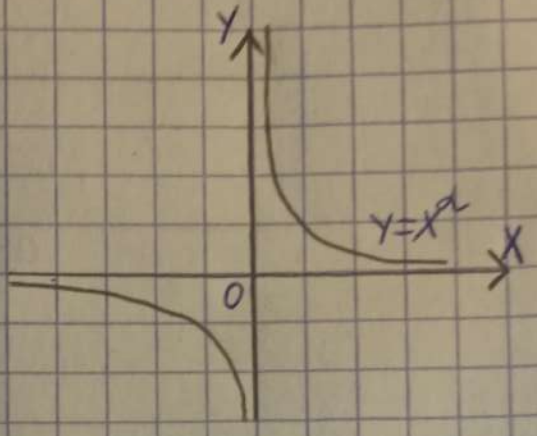
α - чётная



$D(f) = (-\infty; 0) \cup (0; +\infty)$

$E(f) = (0; +\infty)$

α - нечётная

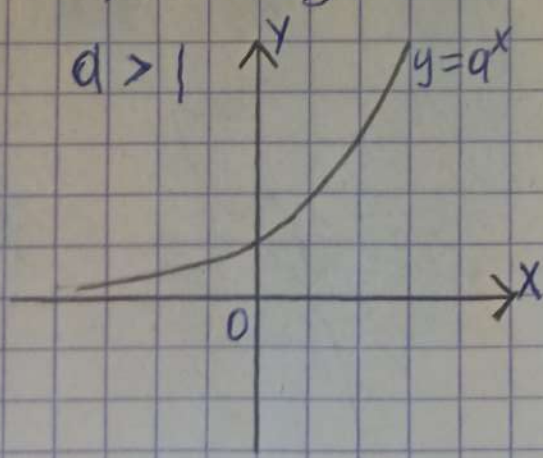


$D(f) = (-\infty; 0) \cup (0; +\infty)$

$E(f) = (-\infty; 0) \cup (0; +\infty)$

3) показательная функция $y = a^x$; $a > 0$

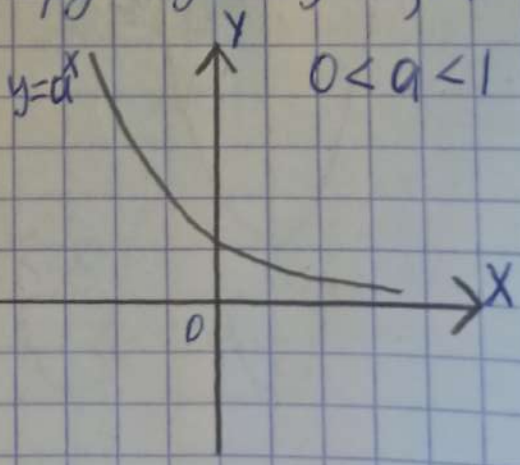
$a > 1$



$D(f) = (-\infty; +\infty)$

$E(f) = (0; +\infty)$

$0 < a < 1$

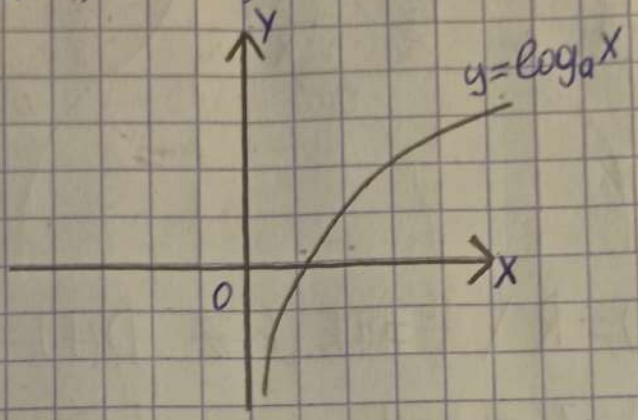


$D(f) = (-\infty; +\infty)$

$E(f) = (0; +\infty)$

4) логарифмическая функция

$y = \log_a x$, $a > 0$, $a \neq 1$

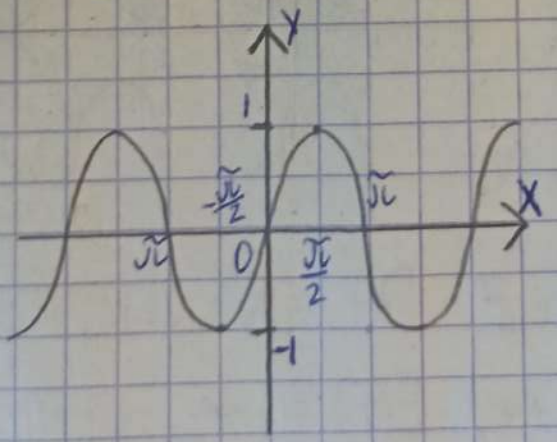


$D(f) = (0; +\infty)$

$E(f) = (-\infty; +\infty)$

5) тригонометрические функции

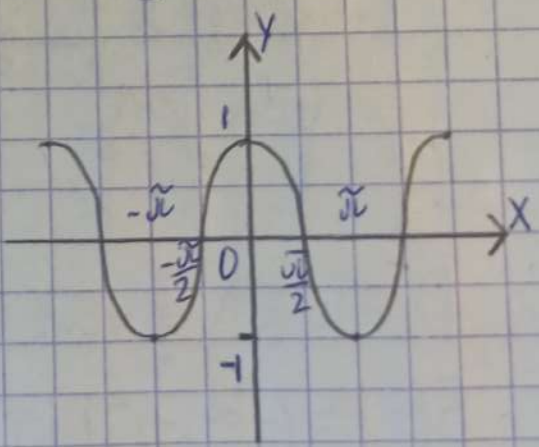
$y = \sin x$



$D(f) = (-\infty; +\infty)$

$E(f) = [-1; 1]$

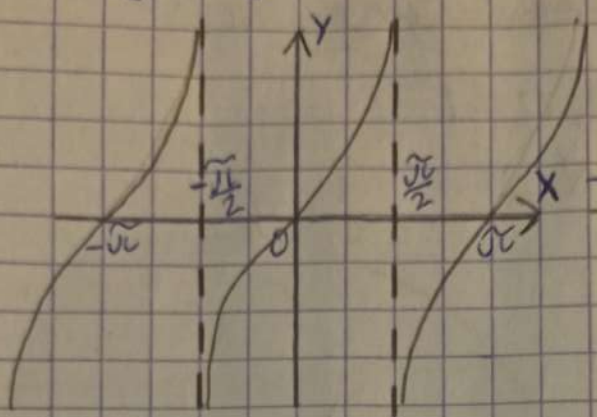
$y = \cos x$



$D(f) = (-\infty; +\infty)$

$E(f) = [-1; 1]$

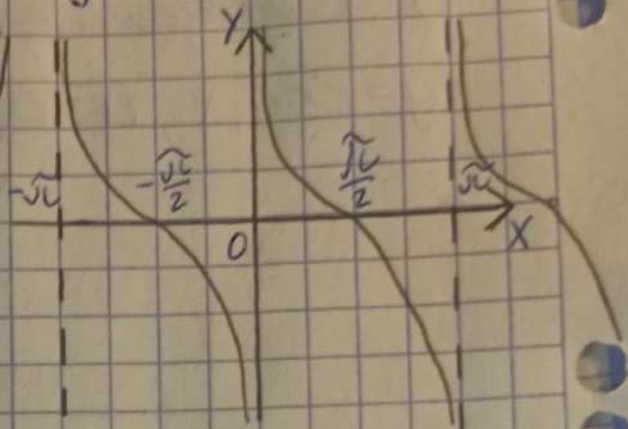
$y = tg\,x$



$D(f) = R \setminus \frac{\pi}{2} + \pi k,\ k \in \mathbb{Z}$

$E(f) = (-\infty; +\infty)$

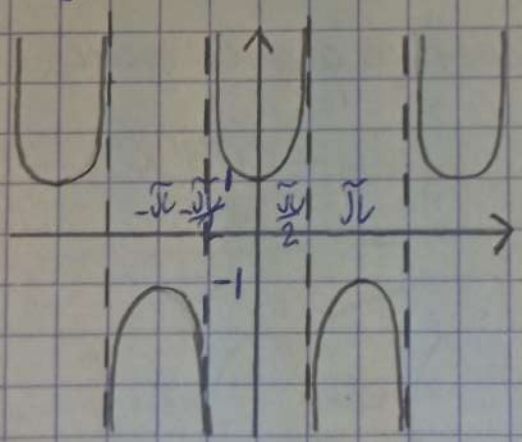
$y = ctg\,x$



$D(f) = R \setminus \pi k,\ k \in \mathbb{Z}$

$E(f) = (-\infty; +\infty)$

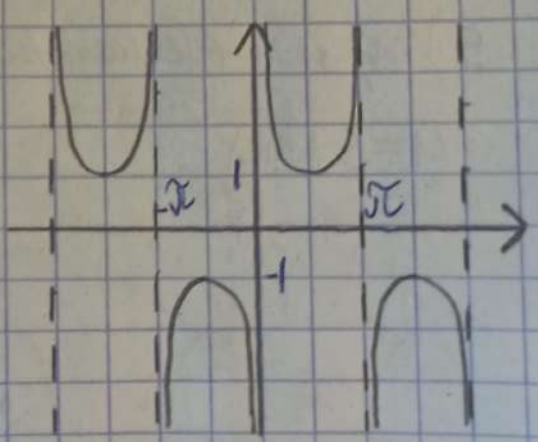
$y = sec\,x$



$D(f) = R \setminus \frac{\pi}{2} + \pi k,\ k \in \mathbb{Z}$

$E(f) = (-\infty; -1] \cup [1; +\infty)$

$y = cosec\,x$

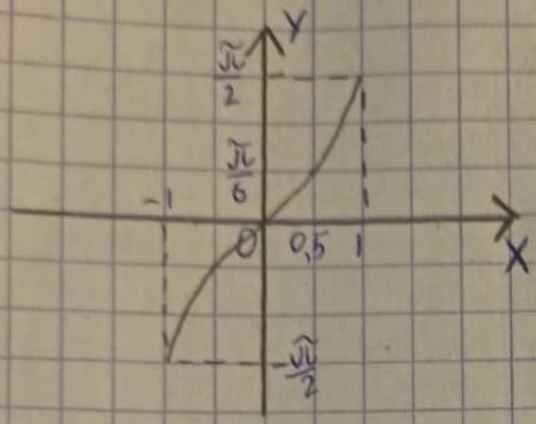


$D(f) = R \setminus \pi k,\ k \in \mathbb{Z}$

$E(f) = (-\infty; -1] \cup [1; +\infty)$

6) обратные тригонометрические ф-ции

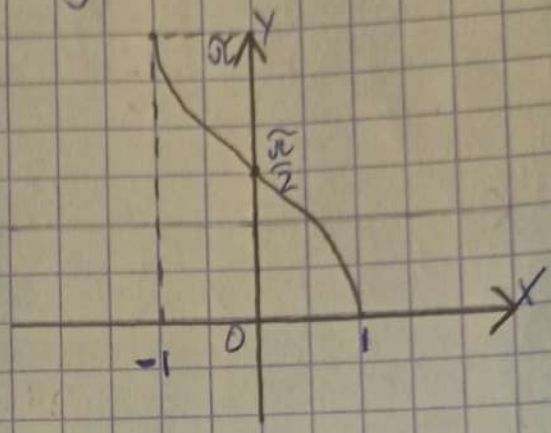
$y = \arcsin x$



$D(f) = [-1; 1]$

$E(f) = [-\frac{\pi}{2}; \frac{\pi}{2}]$

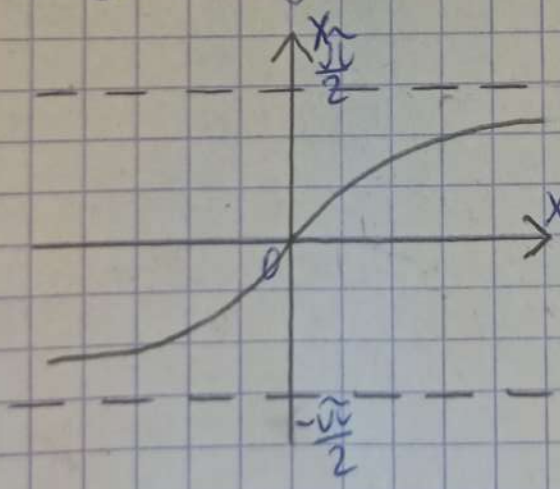
$y = \arccos x$



$D(f) = [-1; 1]$

$E(f) = [0; \pi]$

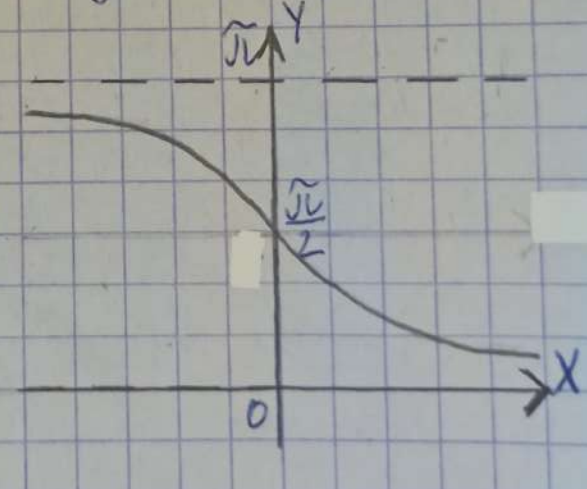
$y = \operatorname{arctg} x$



$D(f) = (-\infty; +\infty)$

$E(f) = (-\frac{\pi}{2}; \frac{\pi}{2})$

$y = \operatorname{arcctg} x$



$D(f) = (-\infty; +\infty)$

$E(f) = (0; \pi)$