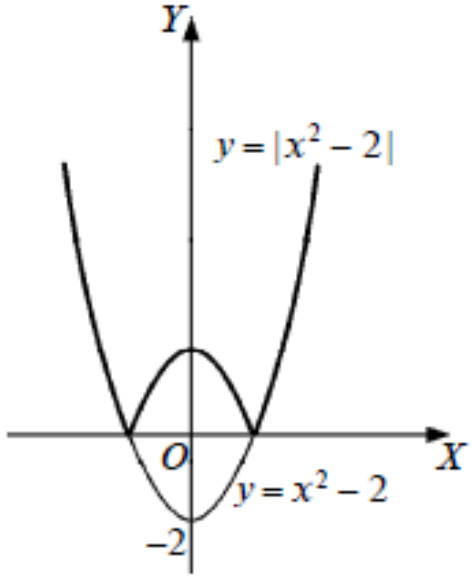
Agzamxo’djayeva M.SH

Mavzu: Modul qatnashgan funksiyalar va ularning grafiklari. $y = |f(x)|$, $y = |f(|x|)$, $y = f(|x|)$.

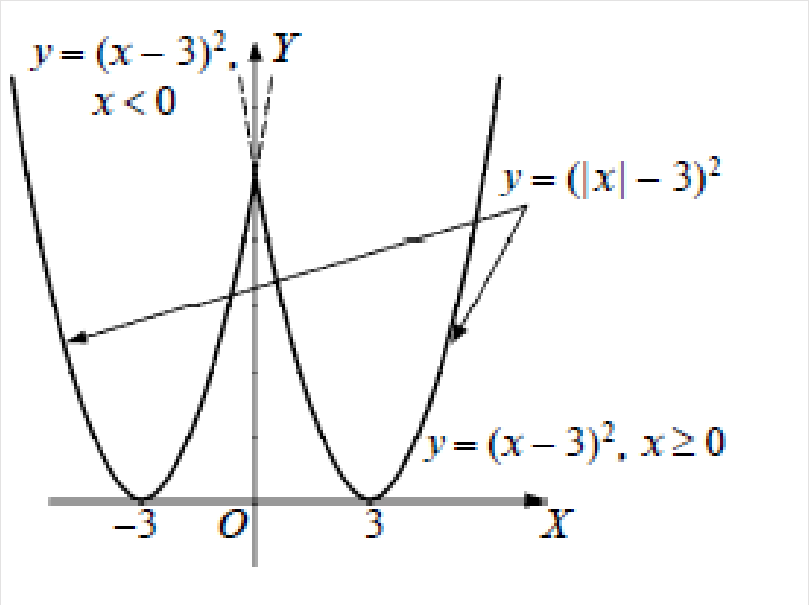
1) $|f(x)| = \begin{cases} f(x), & \text{agar } f(x) \geq 0 \text{ bo‘lsa,} \\ -f(x), & \text{agar } f(x) < 0 \text{ bo‘lsa,} \end{cases}$ ekanini biz bilamiz.

Bundan ko‘rinadiki, $|f|$ grafigini yasash uchun oldin f grafigini yasash, so‘ng uning $y \geq 0$ yarim tekislikdagi qismini o‘z joyida qoldirib, $y < 0$ yarim tekislikdagi qismini esa Ox o‘qqa nisbatan simmetrik akslantirish kerak. 53- rasi $y = |x^2 - 2|$ grafigini $y = x^2 - 2$ grafigidan foydalanib yasash tasvirlangan.

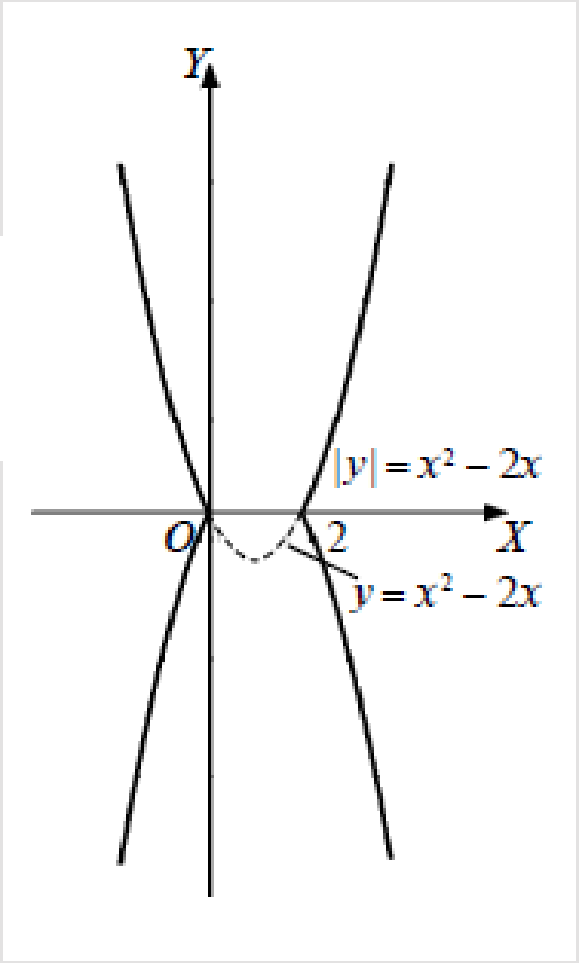


2) $f(|x|) = \begin{cases} f(x), & x \geq 0, \\ f(-x), & x < 0 \end{cases}$ mu-

nosabatdan ko‘rinadiki, $y = f(|x|)$ grafigi $f(x)$ funksiya gra ing $x \geq$ ≥ 0 yarim tekisligidagi qismi hamda uning Oy o‘qiga nisbatan simmetrik aksidan tashkil topadi. 54- rasmda $y = (|x| - 3)^2$ grafigini $y = (x - 3)^2$ grafigidan foydalanib yasash tasvir-langan.



3) 55- rasmda $|y| = x^2 - 2x$ bog‘lanish grafigini $y = x^2 - 2x$ grafigidan foydalanib yasash tasvirlangan.

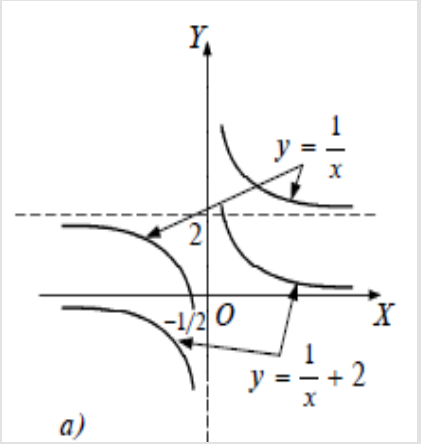


1-misol. $y = \left|\frac{1}{x} + 2\right| + 3$ funksiya grafigini yasaymiz.

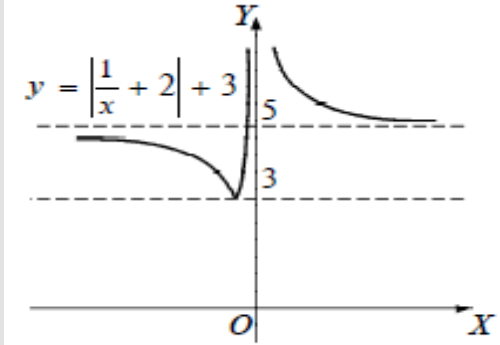
Yechish. a) Dastavval $y = \frac{1}{x}$ funksiya grafigini, so‘ngra shu grafik bo‘yicha $y = \frac{1}{x} + 2$ grafigini yasaymiz (*a* rasm);

b) x ning har qanday qiymatida $y = \left|\frac{1}{x} + 2\right| \geq 0$. Shunga ko‘ra, $y = \frac{1}{x} + 2$ grafigining $-\frac{1}{2} < x < 2$ da Ox o‘qi ostida turgan qismini Ox o‘qiga nisbatan simmetrik akslantiramiz (*b* rasm). Bunda $x = -\frac{1}{y}$ qiymat $y = 0$, ya’ni $\frac{1}{x} + 2 = 0$ bo‘yicha topiladi;

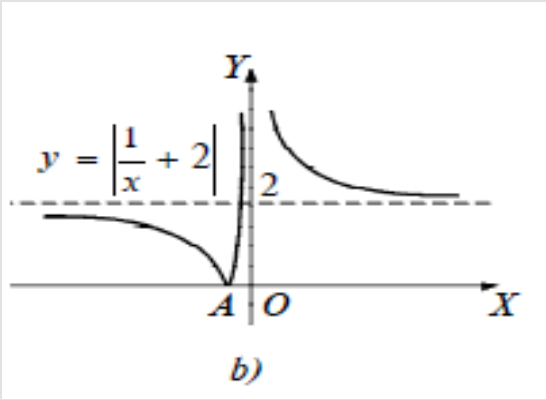
d) talab qilinayotgan $y = \left|\frac{1}{x} + 2\right| + 3$ grafikni yasash uchun $y = \left|\frac{1}{x} + 2\right|$ grafigi 3 birlik yuqoriga parallel ko‘chiriladi (*d* rasm).



a)



d)



b)