3071) [1996_07_26]

Қуйидаги функциялардан қайси бири жуфт?

A) $g(x)=\dfrac{5x^3}{(x-3)^2}$ B) $g(x)=\dfrac{x(x-2)\cdot(x-4)}{x^2-6x+8}$

C) $g(x)=\dfrac{9x^2}{x^2-25}$ D) $g(x)=x^2+|x+1|$ E) $g(x)=\dfrac{x^4-2x^2}{3x}$

3072) [1997_03_26]

Қуйидаги функциялардан қайси бири тоқ?

A) $y=\dfrac{5x^2}{(x-3)^2}$ B) $y=\dfrac{x(x-4)(x-2)}{x^2-6x+8}$ C) $y=\dfrac{9x^2}{x^2-25}$

D) $y=|x+1|+x^2$ E) $y=\dfrac{x^4-2x^2}{3x}$

7.145. a) $y = \frac{5}{2x+1}$ funksiya $(-\infty; -0{,}5)$ da kamayishini;

b) $y = \frac{4}{2-x}$ funksiya $(2; +\infty)$ da o‘sishini;

d) $y = \frac{21x-9}{3x-1}$ funksiya $\left(-\infty; \frac{1}{3}\right)$ da o‘sishini;

e) $y = \frac{4x+31}{x+7}$ funksiya $(-7; +\infty)$ da kamayishini isbotlang.

7.146. a) $y = 3x^2 - 4x + 7$ funksiya $\left(-\infty; \frac{2}{3}\right]$ da kamayishini;

b) $y = 5x^2 + 6x + 19$ funksiya $(-\infty; 0{,}6]$ da o‘sishini;

d) $y = 3\sqrt{4x+1} - 1$ funksiya $[-0{,}25; +\infty)$ da kamayishini;

e) $y = 2 + \sqrt{3-5x}$ funksiya $(-\infty; 0{,}6]$ da kamayishini

7.153. Funksiyalarning nollarini toping:

a) $f(x) = 3x^2 - 4$;

b) $f(x) = 2x^2 - 5x + 6$;

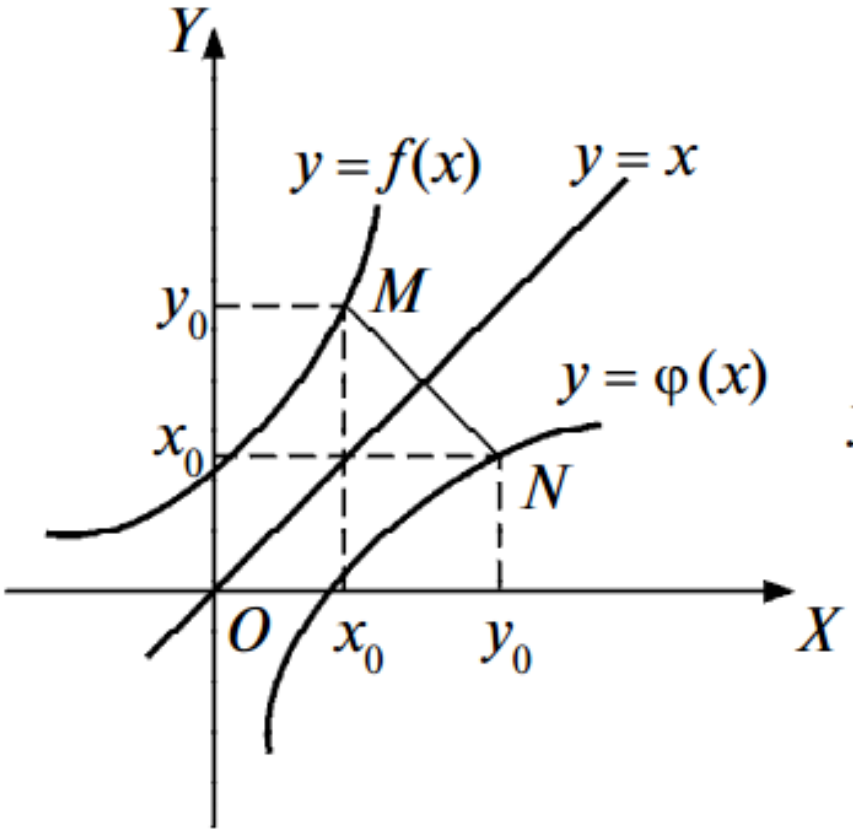
d) $f(x) = \sqrt{x-1} + \sqrt{2-x}$;

e) $f(x) = \frac{x}{x-1} - \frac{2x}{x+1}$;

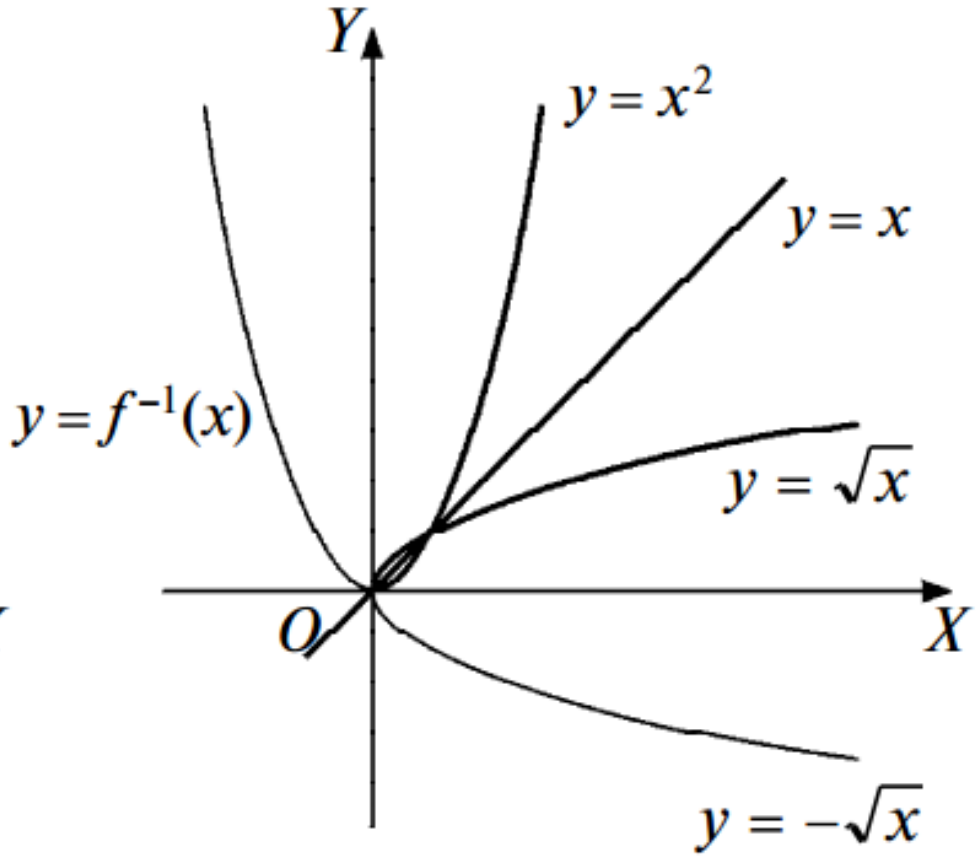
Mavzu: Teskari funksiya.Murakkab funksiya. Teskarilanuvchi funksiyalar

4. Teskari funksiya. Agar $b=f(a)$ tenglikni qanoatlantiruvchi $(a;\ b)$ qiymatlar jufti $a=\varphi(b)$ tenglikni ham qanoatlantirsa, aksincha $a=\varphi(b)$ ni qanoatlantiruvchi shu juft $b=f(a)$ ni ham qanoatlantirsa, $y=f(x)$ va $y=\varphi(x)$ funksiyalar *o'zaro teskari funksiyalar* deyiladi. Bu ikki funksiyadan ixtiyoriy birini *to'g'ri funksiya*, ikkinchisini esa birinchisiga nisbatan *teskari funksiya* deb olish mumkin. f funksiyaga teskari funksiya f^{-1} orqali belgilanadi: $f^{-1}(x)=g(x)$ va $g^{-1}(x)=f(x)$.

Agar X to'plamga qarashli $x_1 \neq x_2$ qiymatlarda funksiyaning mos qiymatlari $f(x_1) \neq f(x_2)$ bo'lsa, f funksiya X to'plamda *teskarilanuvchi funksiya* deyiladi.



a)



b)

7.202. Funksiyaga teskari funksiyani toping:

a) $f(x) = 2x + 3$;

b) $f(x) = \frac{2x-1}{x+2}$;

d) $f(x) = x^2$, $x \in [0;\ +\infty)$;

e) $f(x) = x^2$, $x \in (-\infty;\ 0)$;

7.203. Funksiya teskarilanuvchimi:

a) $f(x) = 3x^2 + 1$;

b) $f(x) = 3x + 4$;

d) $f(x) = 4x - 5$;

e) $f(x) = \frac{3x+1}{4x-2}$;

f) $f(x) = \frac{7x-4}{3x+5}$;

g) $f(x) = \frac{dx+b}{cx+d}$;

h) $f(x) = \begin{cases} x^2, & \text{agar } x \in [0;\ 1), \\ x - 1, & \text{agar } x \in [1;\ 2); \end{cases}$

i) $f(x) = \begin{cases} 3x + 1, & \text{agar } x \in [0;\ 1), \\ -3x + 1, & \text{agar } x \in [1;\ 2); \end{cases}$

7.226. Funksiyaga teskari funksiyani toping va teskari funksiyaning grafigini yasang:

a) $y = 3x - 2$; b) $y = -(x+2)^2 - 2$, $x \in (-\infty; -1)$;

d) $y = \dfrac{x+1}{x-1}$, $y \in (1; +\infty)$; e) $y = \sqrt{x^2 - 4}$, $x \in [2; +\infty)$.

Murakkab funksiya

3087) [1998_12_93]

$f(x) = \begin{cases} 2x^2 + 1, & |x| < 3 \\ 5x - 1, & |x| \geq 3 \end{cases}$ функция берилган. $f(x^2+7)$ функцияни топинг.

A) $5x^2-34$ B) $2x^2+8$ C) $5x^2+36$ D) $5x^2+34$ E) $2(x^2+7)^2+1$

3088) [2002_08_17]

Агар $f(x) = \sqrt{x^3 - 1}$ бўлса, $f(\sqrt[3]{x^2+1})$ нимага тенг?

A) $|x|$ B) x C) $-x$ D) 0 E) $\sqrt{2}$

3089) [2003_09_42]

Агар $f(x+1) = 3 - 2x$ ва $f(\varphi(x)) = 6x - 3$ бўлса, $\varphi(x)$ функцияни аниқланг.

A) $4-3x$ B) $3x-4$ C) $4x+3$ D) $4x-3$ E) $6x-8$