

2/3: ~~№ 80, 82, 84, 85~~

Задача 3.3

№ 81.

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

a) $f(0) = -1$

$$f([-1; 1]) = [0; 4]$$

$$f([-1; 2]) = [0; 9]$$

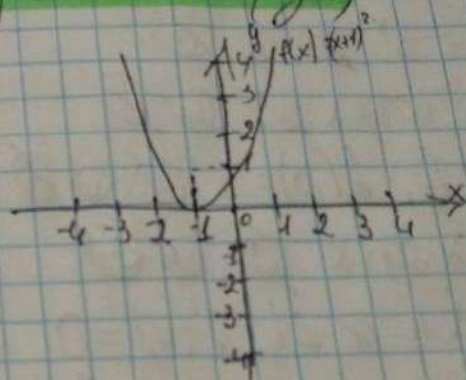
$$f([-2; 0]) = [0; 1]$$

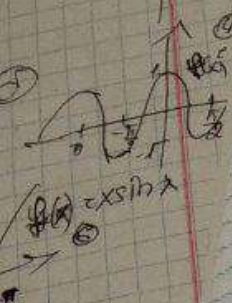
б) $f^{-1}([1; 4]) = [-2; 0]$

$$f^{-1}([-1; 1]) = [-2; 0]$$

$$f^{-1}([0; 2]) = [-\sqrt{2}; 1+\sqrt{2}]$$

$$f^{-1}([1; +\infty)) = [0; +\infty)$$

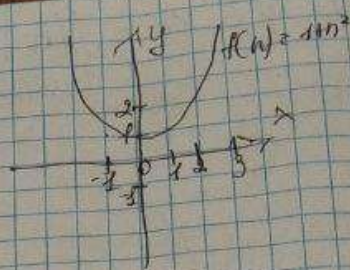




$f(x) = |x|$

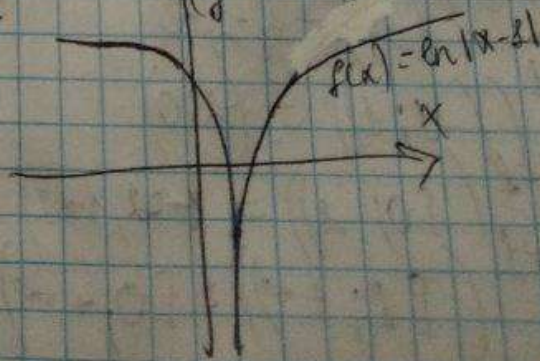
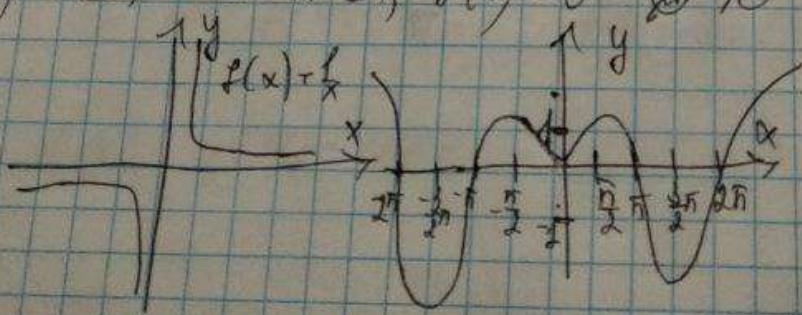
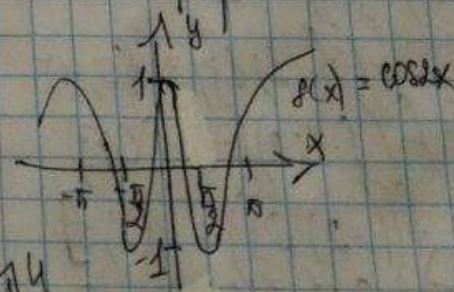
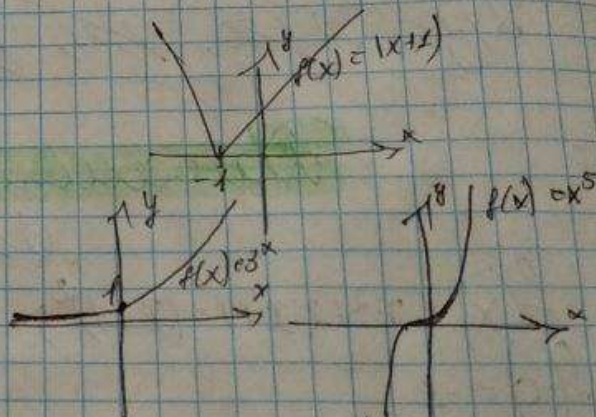
N 180

- $f: \mathbb{R} \rightarrow \mathbb{R}$
 $f(x) = 14x^2$
 1) $f(0) = 0$
 $f(f(0)) = f(0) = 0$
 $f(f(3;4)) = f(10;16)$
 $f(f(-2;2)) = f(5)$
 2) $f^{-1}(f(1)) = 1$
 $f^{-1}(f(5)) = 2$
 $f^{-1}(f(4)) = -1, 1, 5, 17, 5$
 $f^{-1}(f(10;17)) = -3; 3 \quad -4; 4$
 $f^{-1}(f(37;38;39)) = -6; 6$



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- 1) $f(x) = |x+1|$
 2) $f(x) = x^0$
 3) $f(x) = 3^x$
 4) $f(x) = \cos 2x$
 5) $f(x) = \frac{1}{x}$, $f(0) = 1$
 6) $f(x) = x \cdot \sin x$
 7) $f(x) = \ln |x-1|$, $f(1) = 0$



1) (a)

(a) $f(x) = x+1, f: \mathbb{R} \rightarrow [0; +\infty)$

(b) $f(x) = |x+1|, f: \mathbb{R} \rightarrow [0; +\infty)$

2) (a) $f(x) = x^0, f: \mathbb{R} \rightarrow \mathbb{R}$

(b) $f(x) = x^0, f: \mathbb{R} \rightarrow \mathbb{R}$

(c) $f(x) = x^0, f: \mathbb{R} \rightarrow \mathbb{R}$

3) (a) $f(x) = 3^x, f: \mathbb{R} \rightarrow (0; +\infty)$

(b) $f(x) = 3^x, f: \mathbb{R} \rightarrow (0; +\infty)$

(c)

4) (a) $f(x) = \cos 2x, f: [0; \frac{\pi}{2}] \rightarrow [-1; 1]$

(b) $f(x) = \cos 2x, f: [0; \frac{\pi}{2}] \rightarrow [-1; 1]$

(c) $f(x) = \cos 2x, f: [0; \frac{\pi}{2}] \rightarrow [-1; 1]$

5) (a) $f(x) = \frac{1}{x}, f(0) = 1; f: \mathbb{R} \rightarrow (0; +\infty)$

(b) $f(x) = \frac{1}{x}, f(0) = 1; f: \mathbb{R} \rightarrow (0; +\infty)$

(c) $f(x) = \ln|x-1|, f(1) = 0; f: [1; +\infty) \rightarrow (0; +\infty)$

(d) $f(x) = \ln|x-1|, f(1) = 0; f: [1; +\infty) \rightarrow (0; +\infty)$

(e) $f(x) = \ln|x-1|, f(1) = 0; f: [1; +\infty) \rightarrow (0; +\infty)$

Nr. 85.

(a) $f(x) = \cos x$

$f(\{0\}) = \{1\}$

$f(\{0; 2\pi\}) = \{1\}$

$f([0; 2\pi]) = [-1; 1]$

$f([\frac{\pi}{2}; \frac{3\pi}{2}]) = [0; 0]$

(b) $f^{-1}(\{0\}) = \{-\frac{\pi}{2} + 2n\pi, n \in \mathbb{Z}\}$

$f^{-1}((-1; 1)) = \mathbb{R}$

$f^{-1}([0; 1]) = (-\frac{\pi}{2}; \frac{\pi}{2}]$

$f^{-1}([0; \frac{1}{2}]) = (-\frac{\pi}{2}; \frac{\pi}{6}]$

