

1.3 12 Basic Fncs.

- Obj: 1. Recognize the graphs
 2. Determine domain
 3. Piecewise fncs.

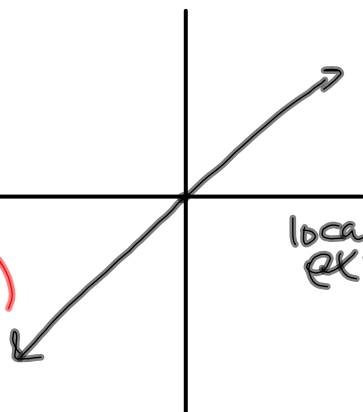
$$f(x) = x$$

$$D: (-\infty, \infty)$$

$$R: (-\infty, \infty)$$

$$\text{inc: } (-\infty, \infty)$$

$$\text{dec: none}$$



Odd

local extrema: none

Sep 14-9:09 AM

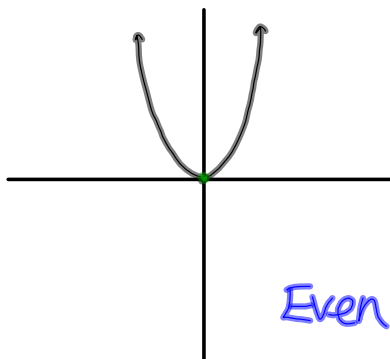
$$f(x) = x^2$$

$$D: (-\infty, \infty)$$

$$R: [0, \infty)$$

$$\text{inc: } (0, \infty)$$

$$\text{dec: } (-\infty, 0)$$



local extrema:
min @ $x=0$

Even

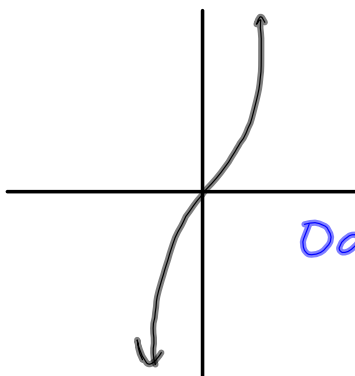
$$f(x) = x^3$$

$$D: (-\infty, \infty)$$

$$R: (-\infty, \infty)$$

$$\text{inc: } (-\infty, \infty)$$

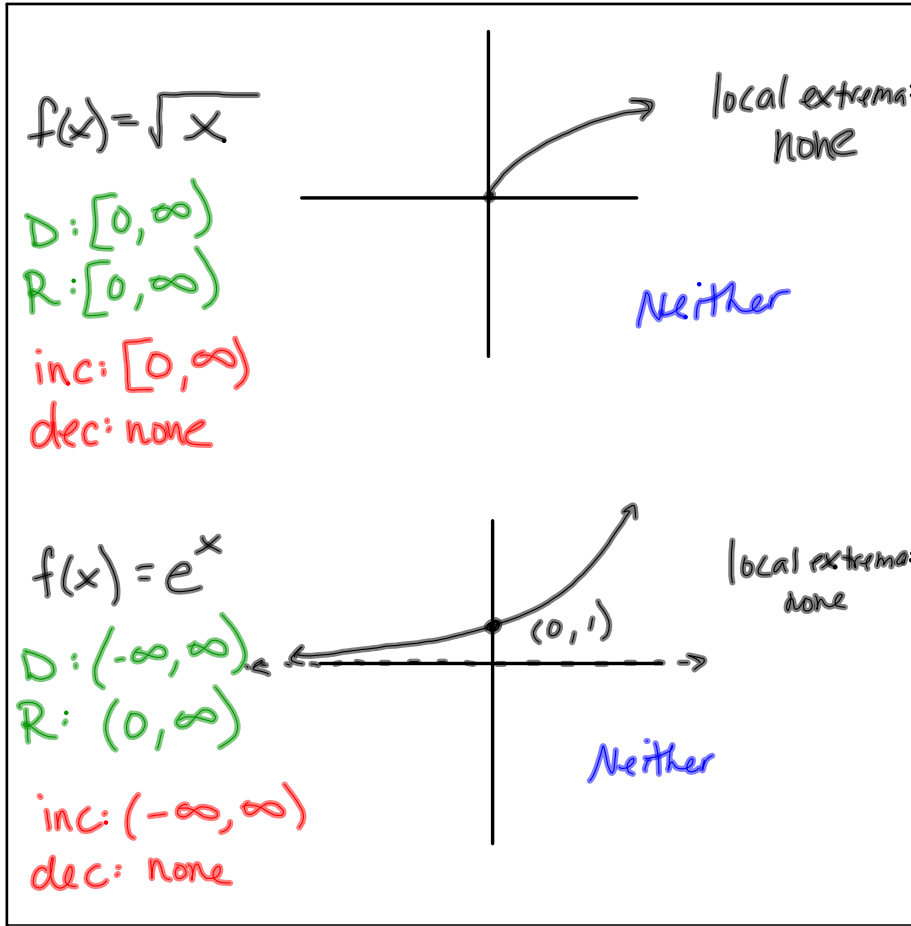
$$\text{dec: none}$$



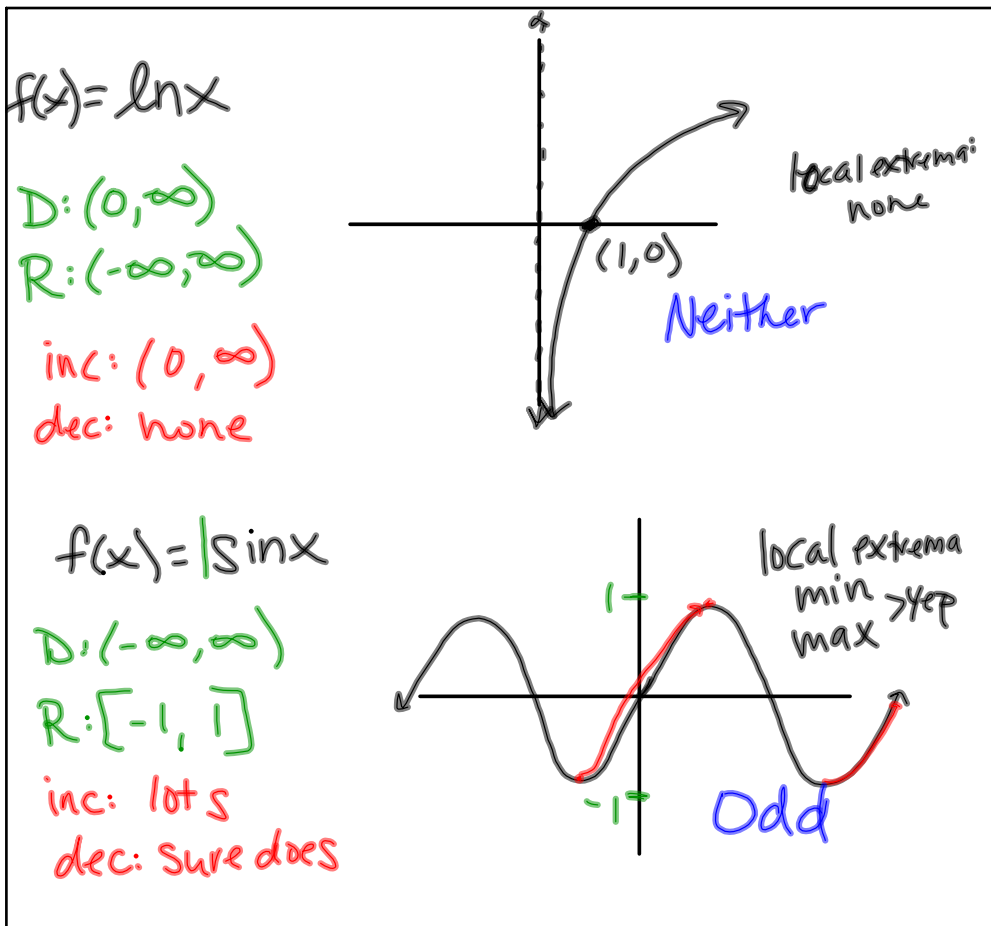
local extrema:
none

Odd

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Sep 14-9:50 AM



Sep 14-9:55 AM

$f(x) = \cos x$
 $D: (-\infty, \infty)$
 $R: [-1, 1]$
 inc: oui \rightarrow Yes!
 dec: Uh-huh

local extrema
min
max - got 2 m!

Even

$f(x) = |x|$
 $D: (-\infty, \infty)$
 $R: [0, \infty)$
 inc: $(0, \infty)$
 dec: $(-\infty, 0)$

local extrema:
min @ x=0

Even

Sep 14-10:02 AM

$f(x) = \frac{1}{x}$
 $D: (-\infty, 0) \cup (0, \infty) \ x \neq 0$
 $R: (-\infty, 0) \cup (0, \infty) \ y \neq 0$
 inc: none
 dec: $(-\infty, 0) \cup (0, \infty)$

local extrema:
none

Odd

$f(x) = \frac{1}{1 + e^{-x}}$ ← "Logistic Fnc."
 $D: (-\infty, \infty) \ \mathbb{R}$
 $R: (0, 1)$
 inc: $(-\infty, \infty)$
 dec: none

local extrema:
none

Neither

Sep 14-10:07 AM

$f(x) = \text{int}(x)$ "Greatest Integer"
 $D: (-\infty, \infty)$
 $R: \text{integers only } \mathbb{Z}$
 inc: none
 dec: none
 (constant: $(-\infty, \infty)$)

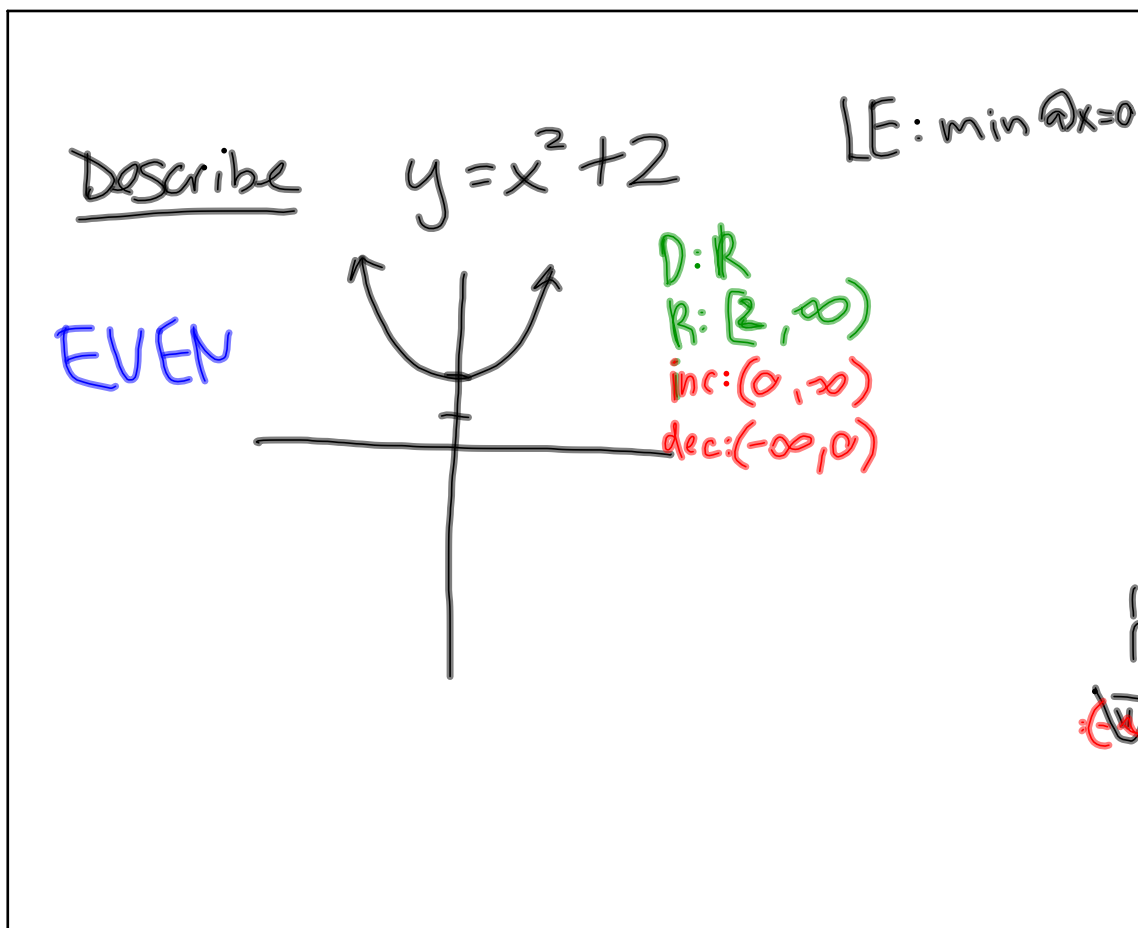
local extrema none
Neither

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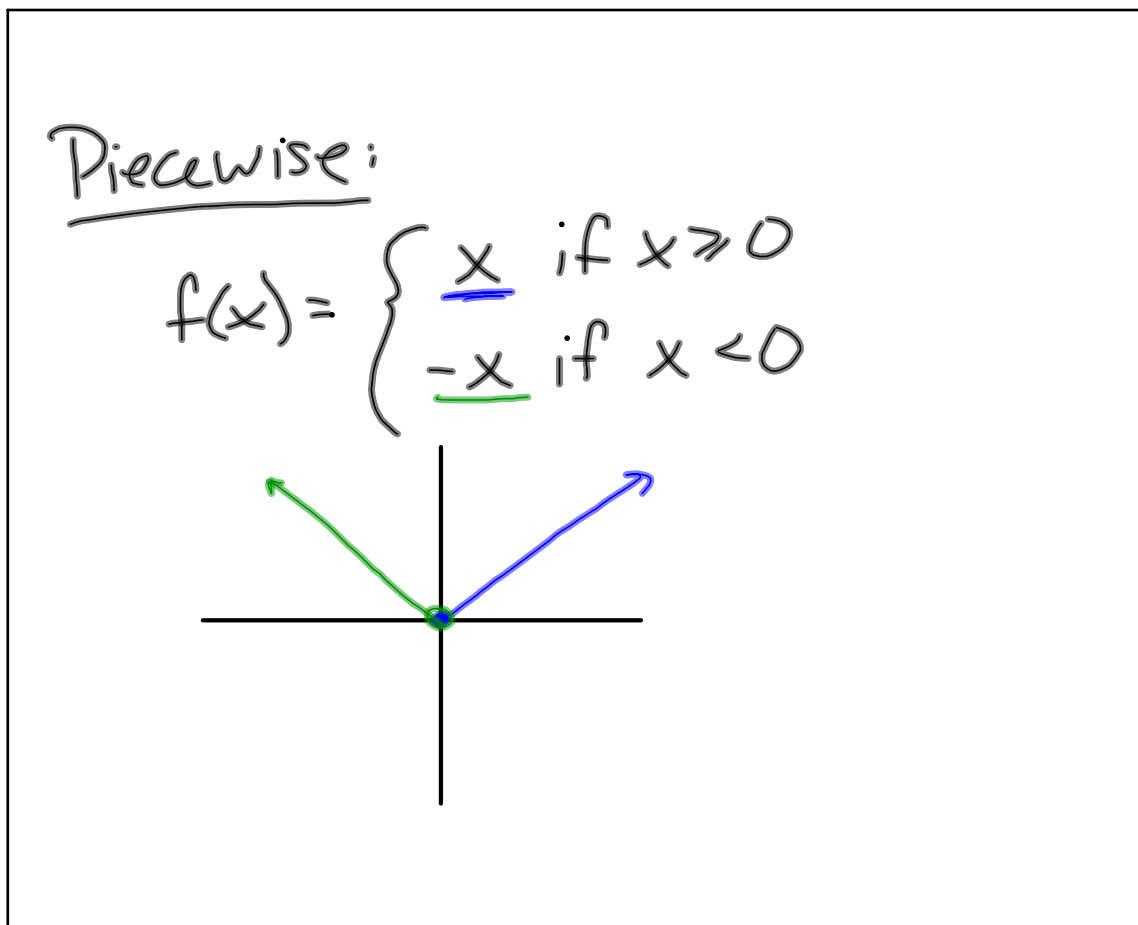
Describe the fnc: $f(x) = (x-2)^2$

$D: (-\infty, \infty)$
 $R: [0, \infty)$
 inc: $(2, \infty)$
 dec: $(-\infty, 2)$
 local extrema: min@x=2
 Neither

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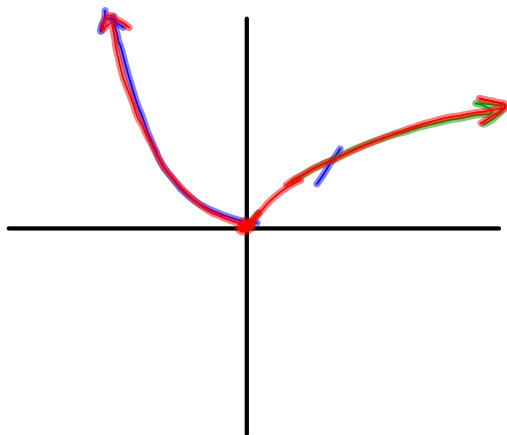


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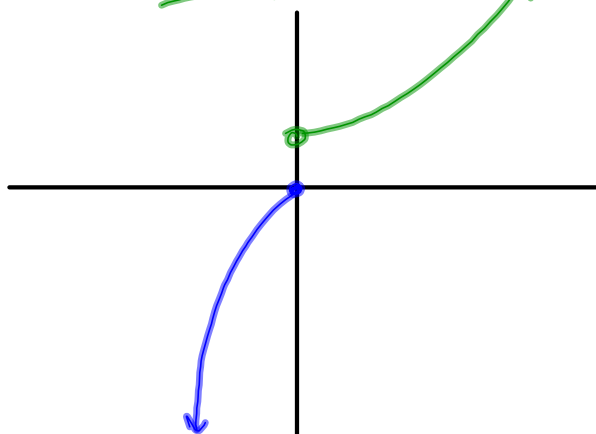
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$$f(x) = \begin{cases} x^2 & \text{if } x \leq 0 \\ \sqrt{x} & \text{if } x > 0 \end{cases}$$



Sep 14-10:31 AM

$$g(x) = \begin{cases} x^3 & \text{if } x \leq 0 \\ e^x & \text{if } x > 0 \end{cases}$$



Sep 14-10:33 AM