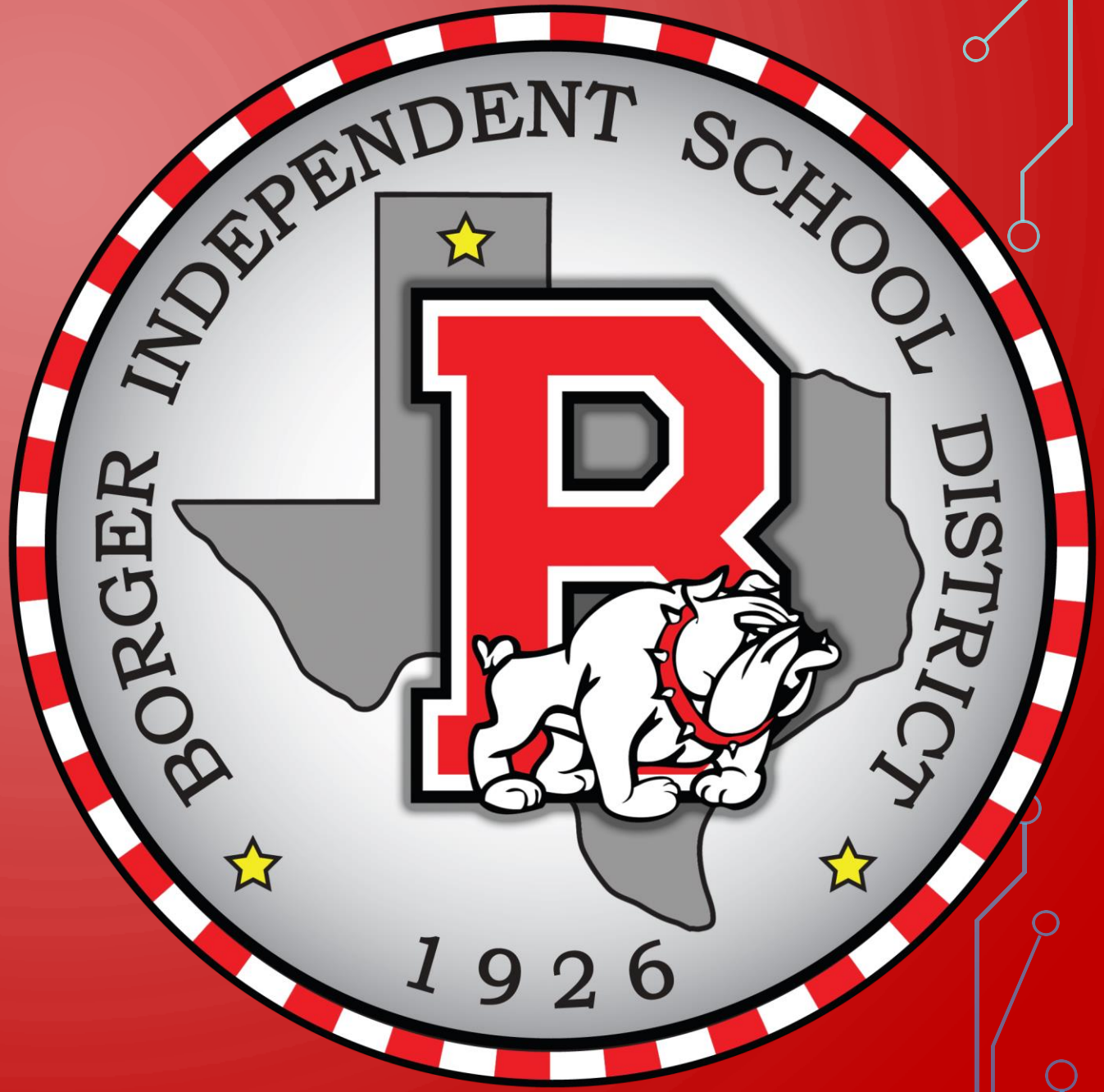
BOARD NOTES

10 SEPTEMBER 2019



2A.2 (A) graph the functions $f(x) = x^2$, $f(x) = \sqrt{x} = \sqrt[2]{x}$, $f(x) = {}^1/_x$, $f(x) = \sqrt[3]{x}$, $f(x) = x^3$, $f(x) = |x|$, $f(x) = b^x$, $f(x) = \log_b x$ where b is 2, 10, and e, and, when applicable, analyze the key attributes such as domain, range, intercepts, symmetries, asymptotic behavior, and maximum and minimum given an interval;

2A.2 (D) use the composition of two functions, including the necessary restrictions on the domain, to determine if the functions are inverses of each other;

2A.7 (I) write the domain and range of a function in interval notation, inequalities, and set notation.

We will be able to transform parent functions.

WHAT WE NEED:

- TI – 84

I WILL BE ABLE TO COMPLETE MY HOMEWORK GIVING THE

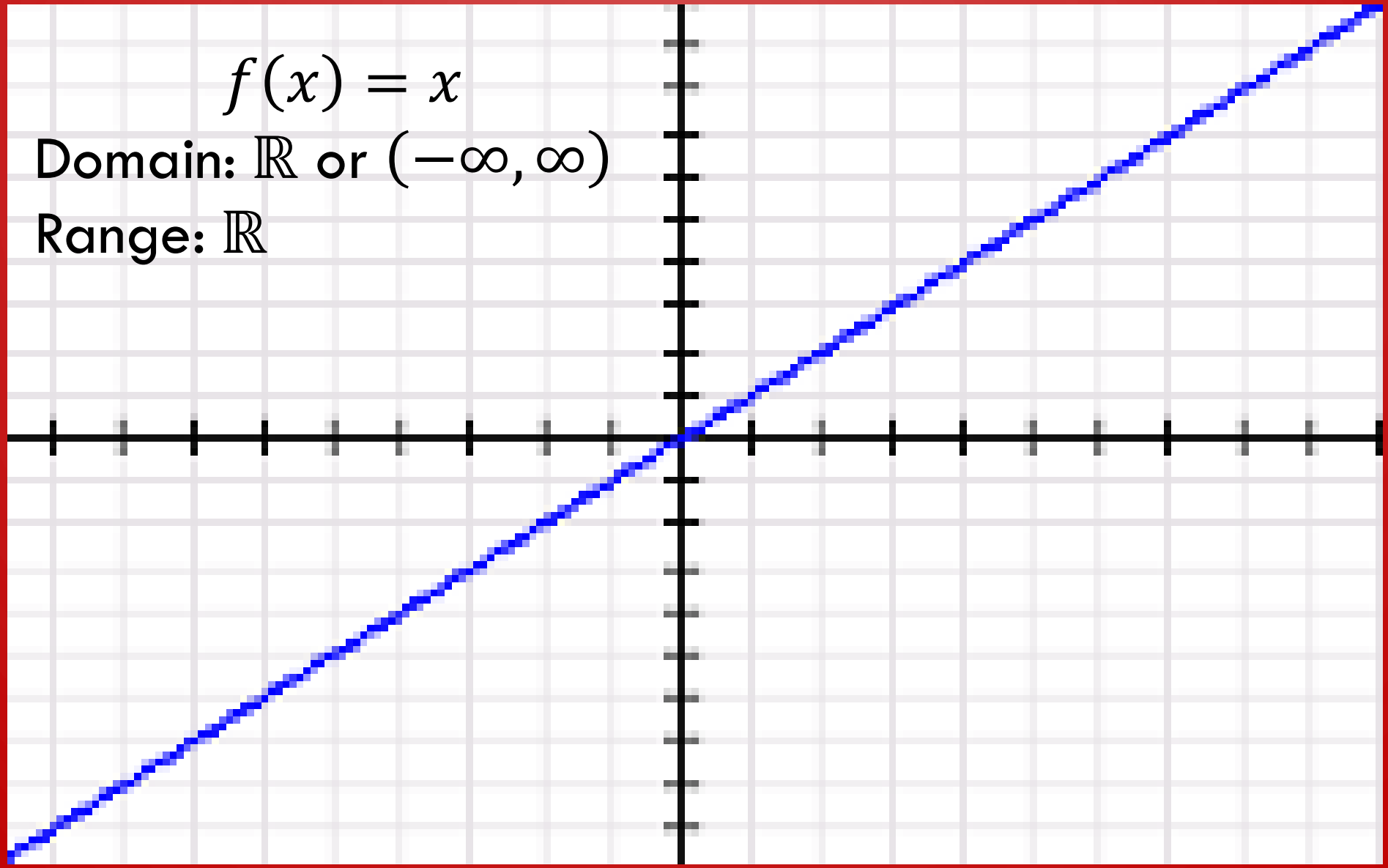
- Domain
- Range
- Intercepts (if any)
- Intervals of: Increasing / Decreasing / Constant
- Reflections
- Even / Odd / Neither
- Transformations

Linear Parent Function

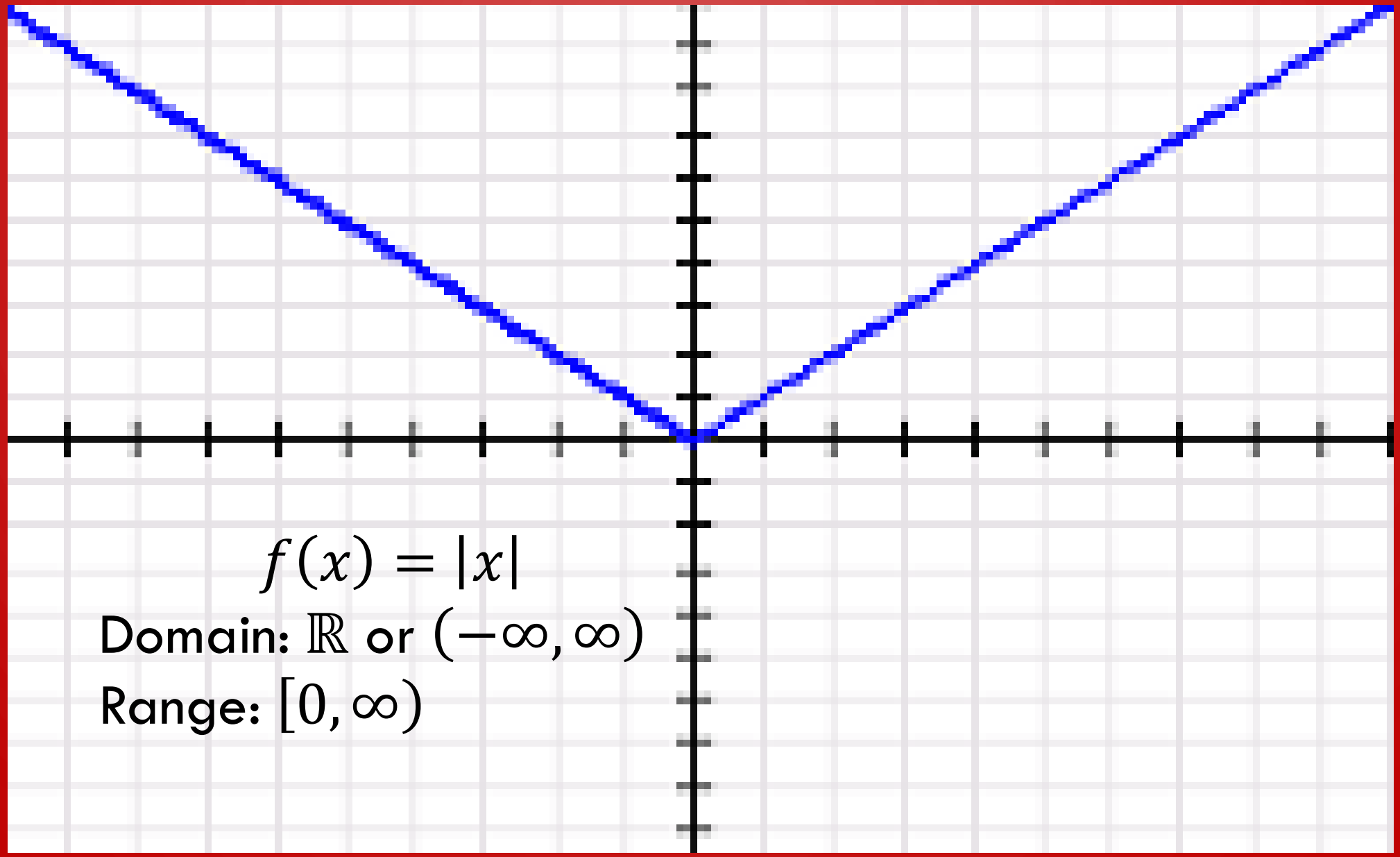
$$f(x) = x$$

Domain: $\mathbb{R}$ or $(-\infty, \infty)$

Range: $\mathbb{R}$



Absolute Value Parent Function



$$f(x) = |x|$$

Domain: $\mathbb{R}$ or $(-\infty, \infty)$

Range: $[0, \infty)$

Reciprocal or Rational Parent Function

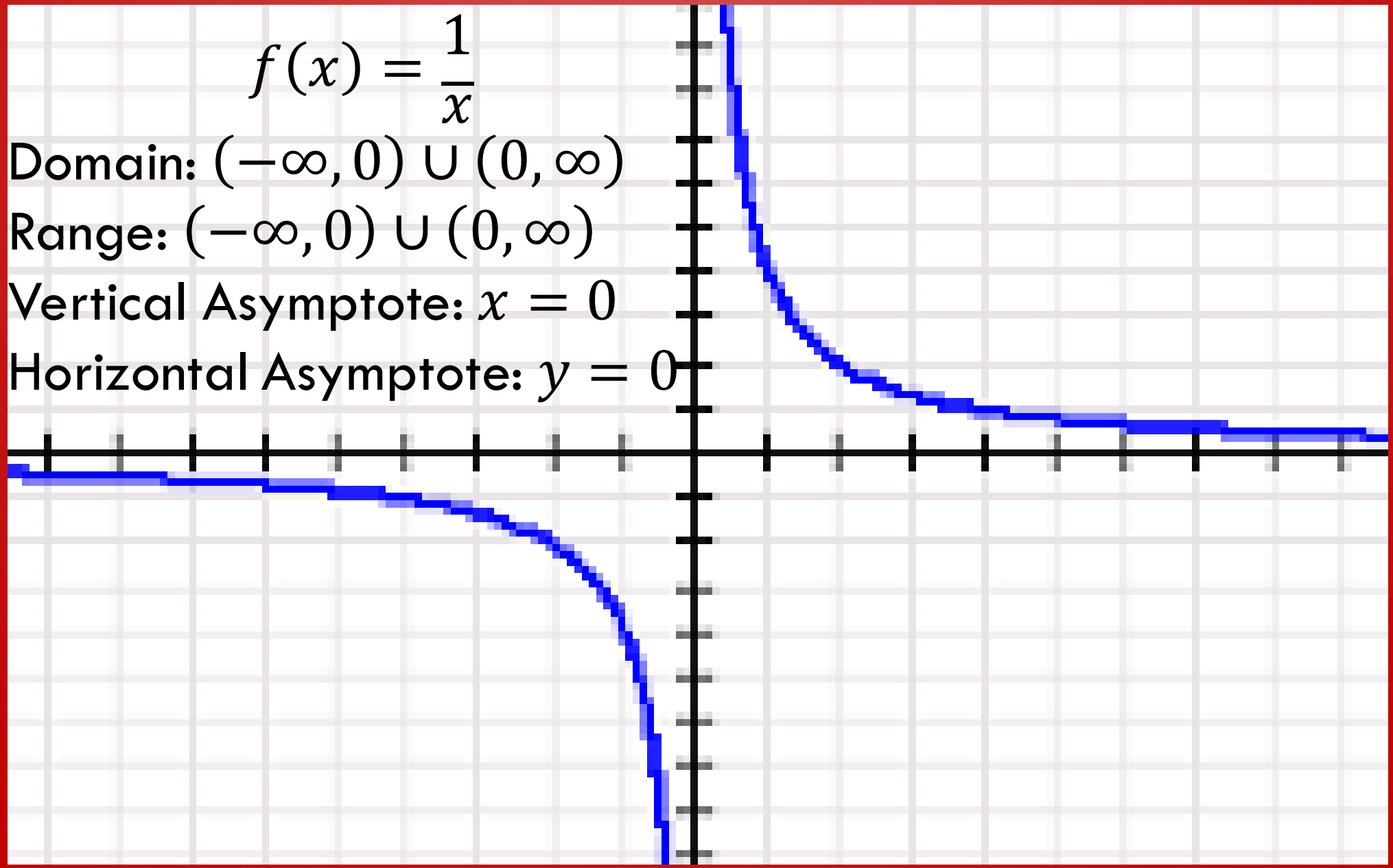
$$f(x) = \frac{1}{x}$$

Domain: $(-\infty, 0) \cup (0, \infty)$

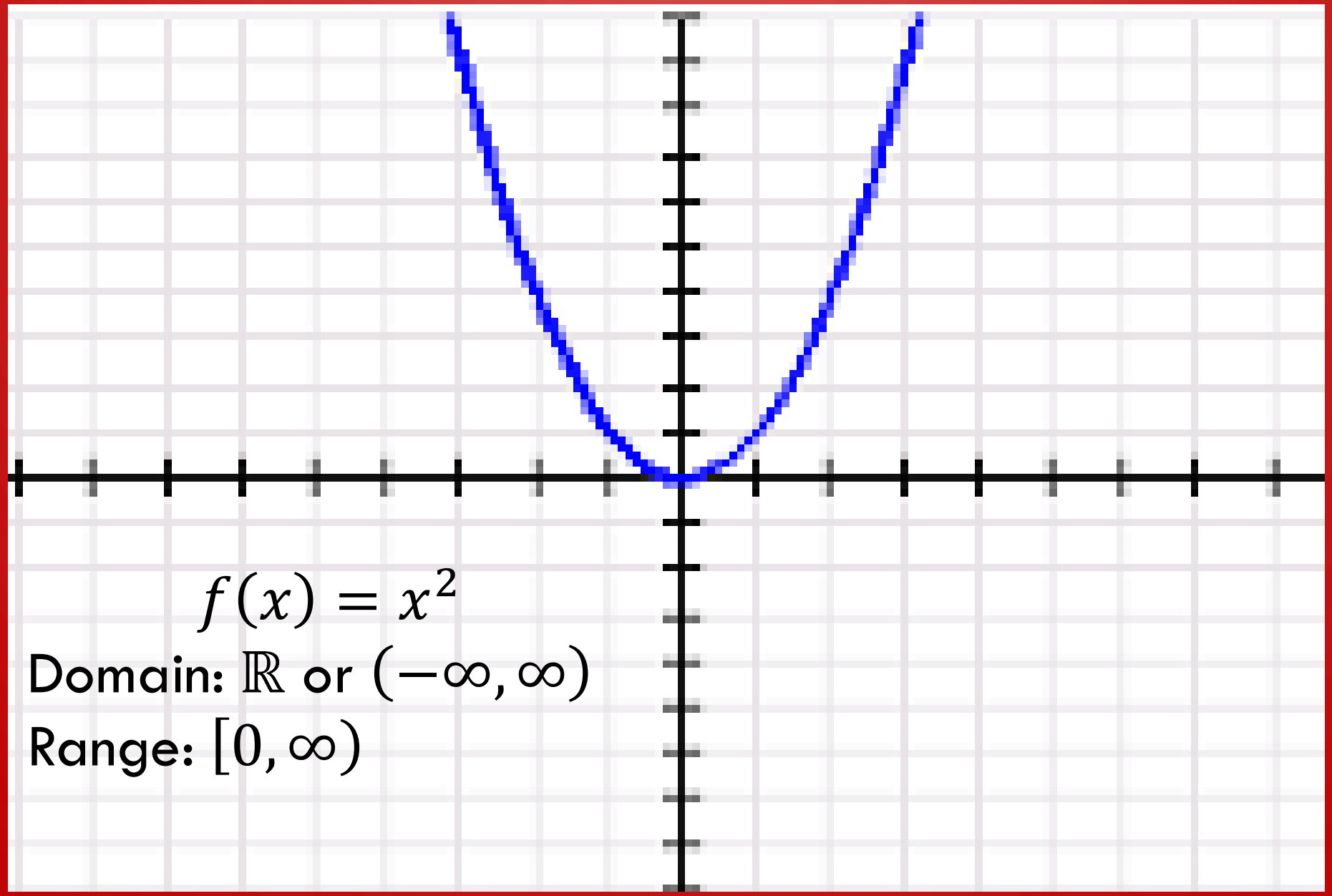
Range: $(-\infty, 0) \cup (0, \infty)$

Vertical Asymptote: $x = 0$

Horizontal Asymptote: $y = 0$



Quadratic Parent Function

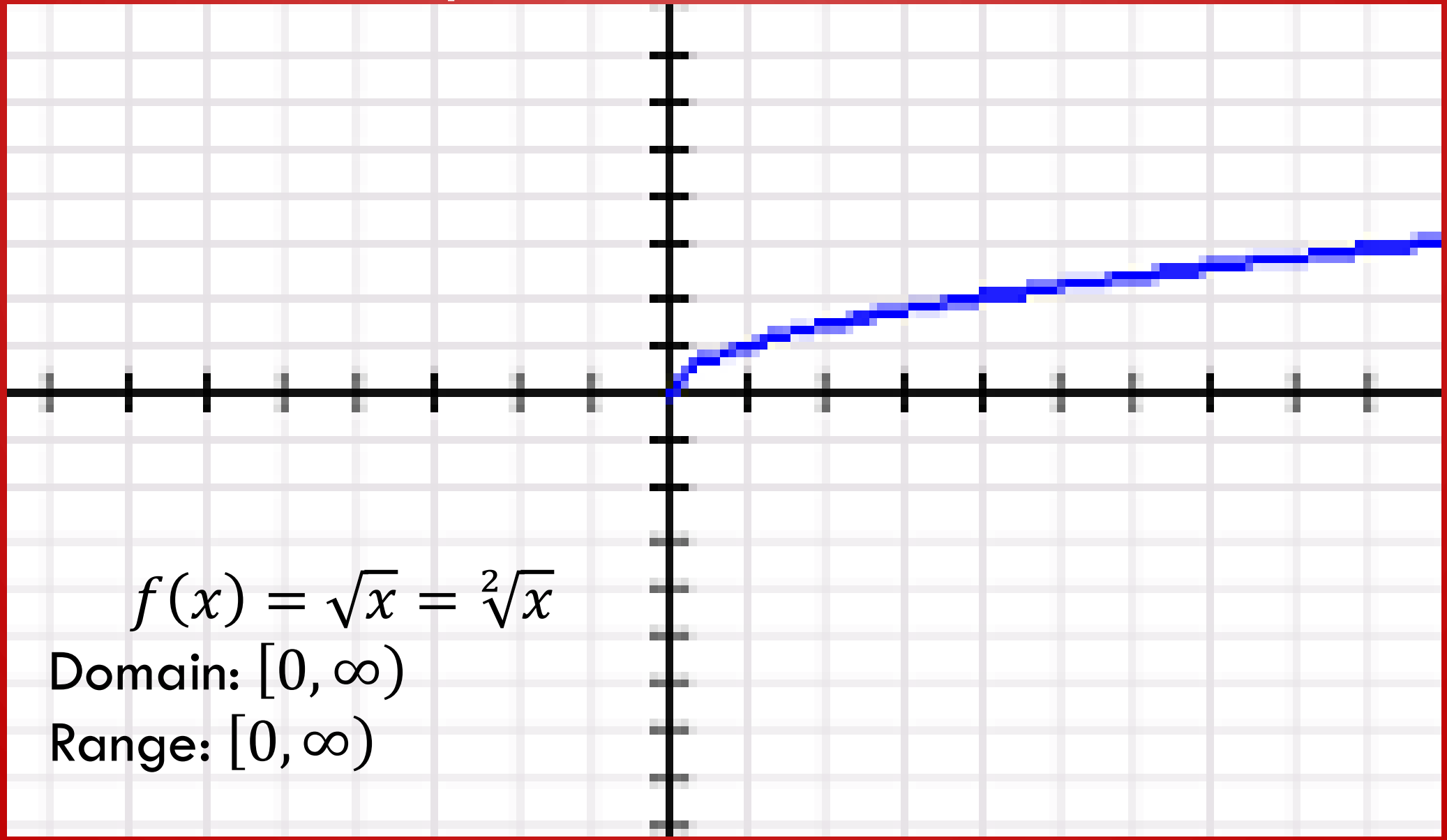


$f(x) = x^2$

Domain: $\mathbb{R}$ or $(-\infty, \infty)$

Range: $[0, \infty)$

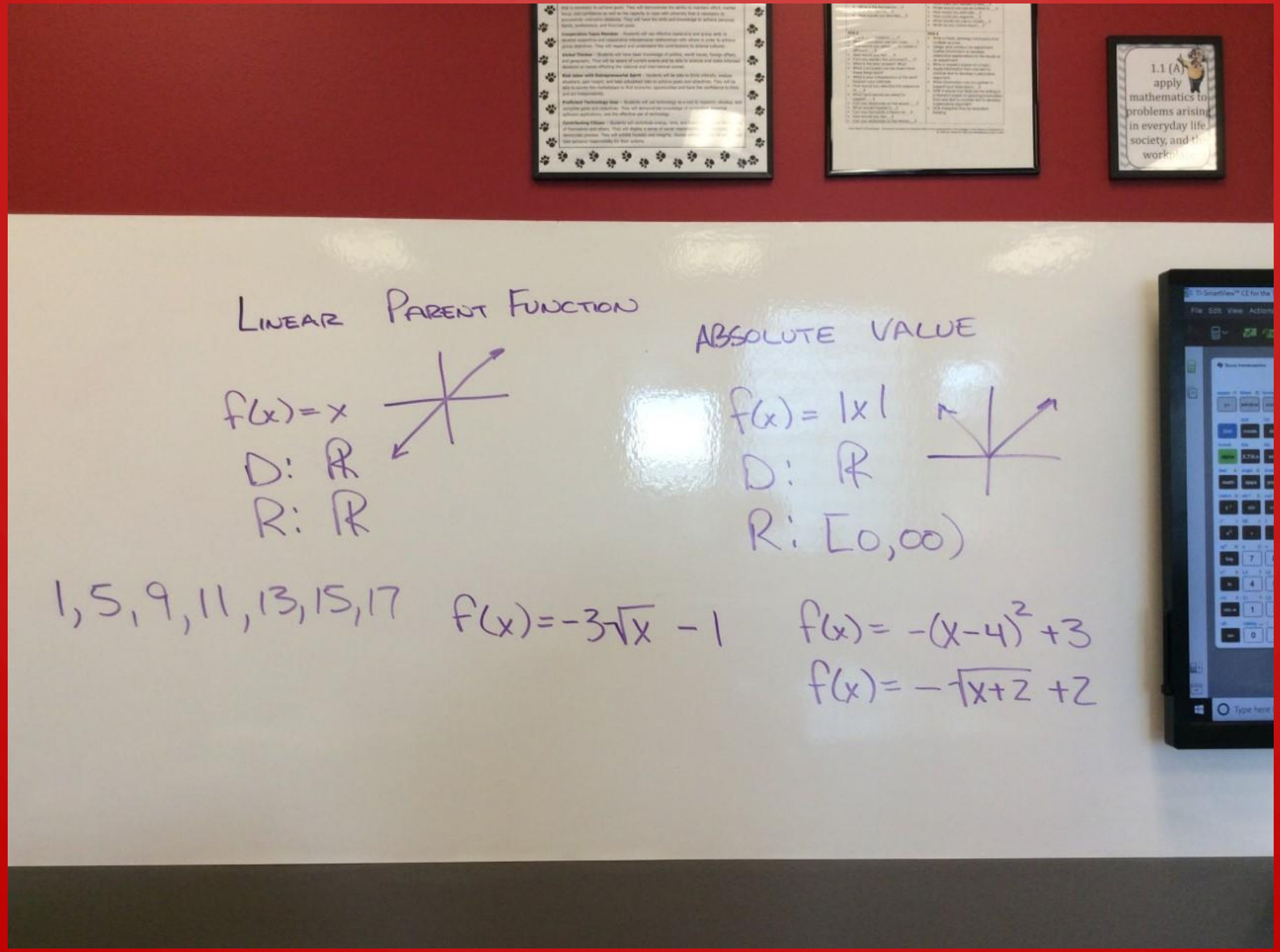
Square Root Parent Function

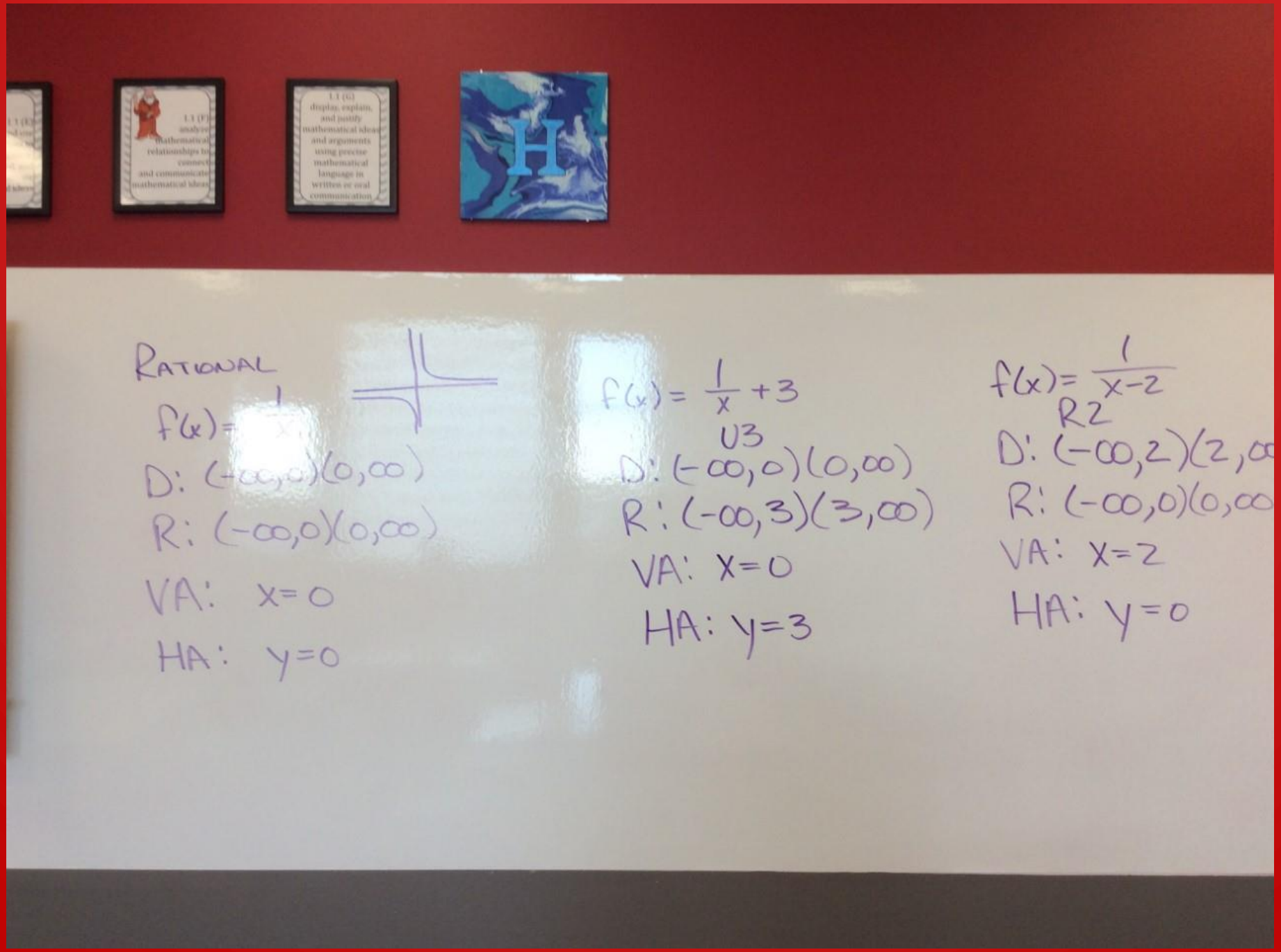


$$f(x) = \sqrt{x} = \sqrt[2]{x}$$

Domain: $[0, \infty)$

Range: $[0, \infty)$


LINEAR PARENT FUNCTION
f(x)=x
D: ℝ
R: ℝ
ABSOLUTE VALUE
f(x)=|x|
D: ℝ
R: [0,∞)
1,5,9,11,13,15,17
f(x)=-3√x -1
f(x)=-(x-4)²+3
f(x)=-√(x+2)+2


RATIONAL
$f(x)=\frac{1}{x}$
D: $(-\infty,0)(0,\infty)$
R: $(-\infty,0)(0,\infty)$
VA: $x=0$
HA: $y=0$
$f(x)=\frac{1}{x}+3$
U3
D: $(-\infty,0)(0,\infty)$
R: $(-\infty,3)(3,\infty)$
VA: $x=0$
HA: $y=3$
$f(x)=\frac{1}{x-2}$
R2
D: $(-\infty,2)(2,\infty$
R: $(-\infty,0)(0,\infty$
VA: $x=2$
HA: $y=0$

$f(x) = \frac{1}{x+2} - 3$ L2 D3

D: $(-\infty, -2)(-2, \infty)$

R: $(-\infty, -3)(-3, \infty)$

VA: $x = -2$

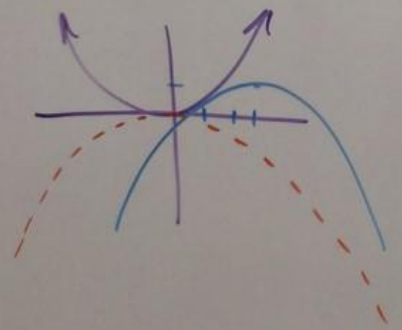
HA: $y = -3$

QUADRATIC

$f(x) = x^2$

D: $(-\infty, \infty)$ OR $\mathbb{R}$

R: $[0, \infty)$



x	y
-2	4
-1	1
0	0
1	1
2	4

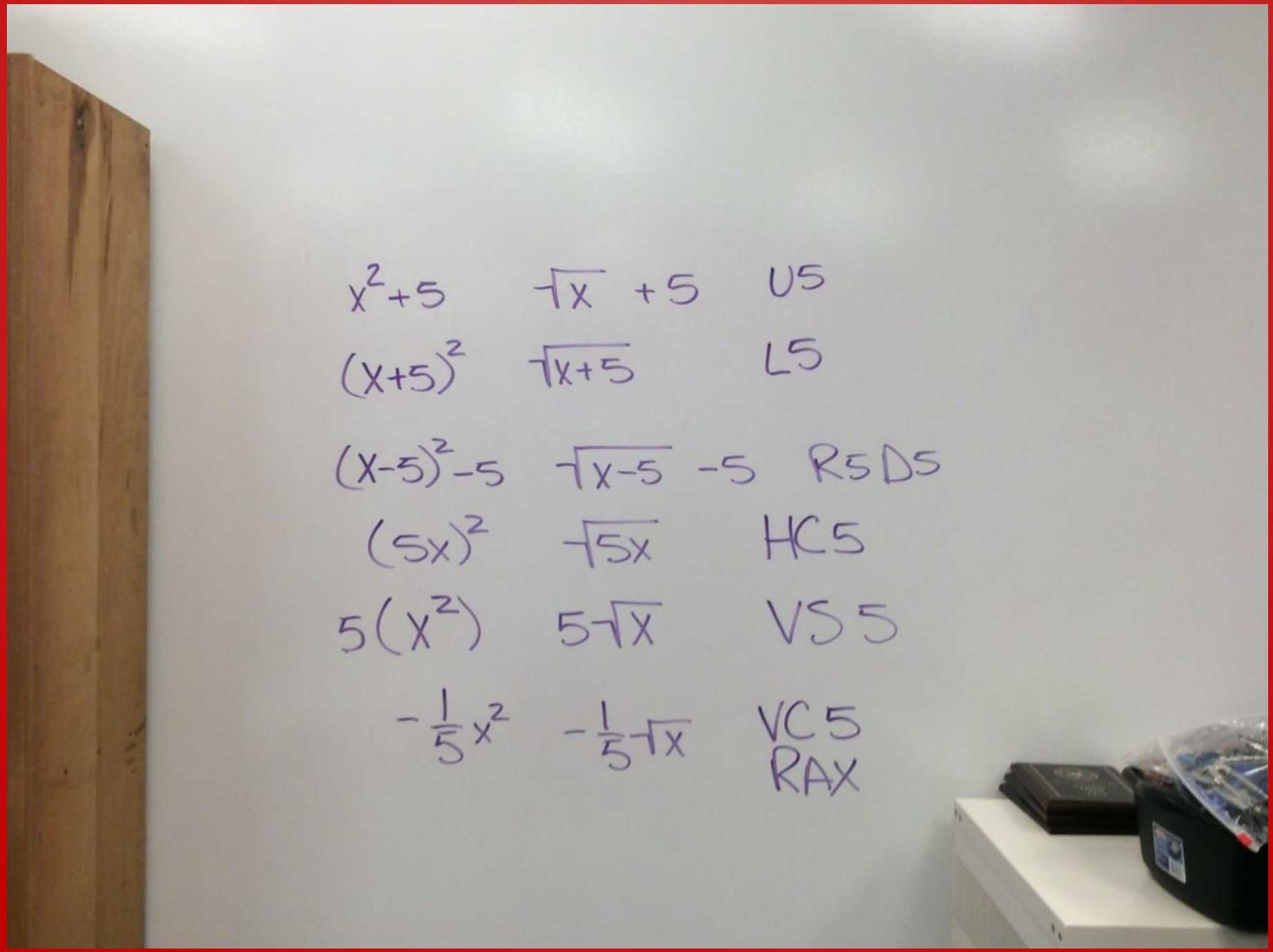
SQUARE ROOT

$f(x) = \sqrt{x} = \sqrt[2]{x}$

D: $[0, \infty)$

R: $[0, \infty)$

x	y
0	0
1	1
4	2
9	3

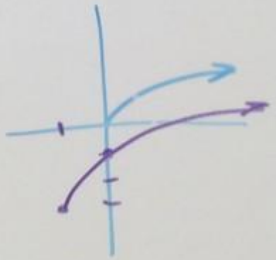

x^2+5 $\sqrt{x}+5$ US
$(x+5)^2$ $\sqrt{x+5}$ LS
$(x-5)^2-5$ $\sqrt{x-5}-5$ RSDS
$(5x)^2$ $\sqrt{5x}$ HCS
$5(x^2)$ $5\sqrt{x}$ VSS
$-\frac{1}{5}x^2$ $-\frac{1}{5}\sqrt{x}$ VCS
RAX

$f(x) = -(x-3)^2 + 1$

R3 U1 RAX

D: $\mathbb{R}$

R: $(-\infty, 1]$



$f(x) = 2\sqrt{x+1} - 3$

L1 D3 VS2

D: $[-1, \infty)$

R: $[-3, \infty)$