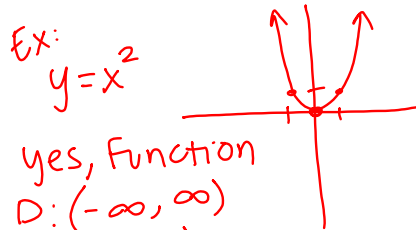


1.2 Functions & their properties

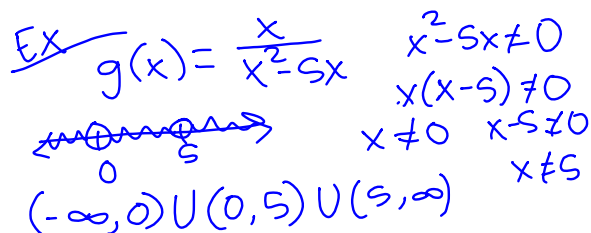
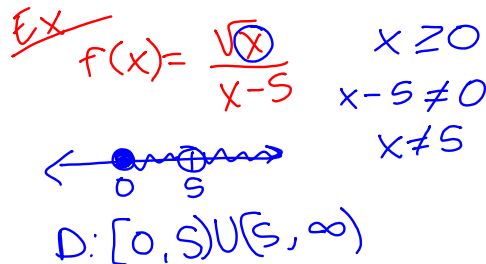
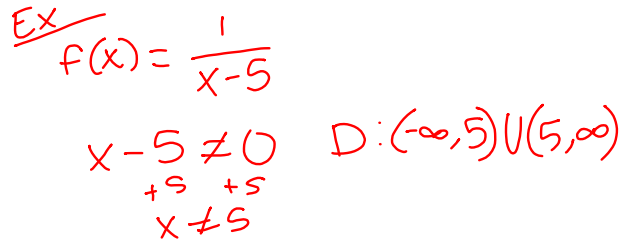
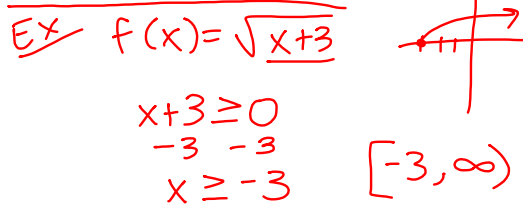
- Obj: ① Find domain/range
 ② Identify asymptotes
 ③ continuity

Function: ① Passes VLT
 ② only one y-value for each x-value

Domain: all possible x-values
 Range: " " y-values



yes, function
 D: $(-\infty, \infty)$
 R: $[0, \infty)$



Asymptotes:

Vertical: set the denominator = 0,
solve for x.

* Find VA: $y = \frac{x}{x^2 - x - 2}$

$$x^2 - x - 2 = 0$$

$$(x-2)(x+1) = 0$$

$$x-2=0 \quad x+1=0$$

$$x=2 \quad x=-1$$

* Find HA: $f(x) = \frac{1x^0 \text{ deg } 0}{x^2 - 5x + 4 \text{ deg } 2}$

$$y=0$$

Horizontal Asymptotes:

① degree of numerator < degree of denom.

$$\text{HA @ } y=0$$

② deg. of num = deg. of den.

$$\text{HA @ } y = \frac{a}{b}$$

a, b are leading coeff.

③ deg. of num > deg. of den.
no HA

EX $f(x) = \frac{2x^2 + 1}{4 - x^2}$ HA: $y = \frac{2}{-1}$

$$y = -2$$

Continuity: if there is a value that $x \neq$, then function is discontinuous.

