

p62 #1-6, 17-20, 31, 32

① a)  $\lim_{x \rightarrow 3^-} f(x) = 3$

b)  $\lim_{x \rightarrow 3^+} f(x) = -2$

c)  $\lim_{x \rightarrow 3} f(x)$  DNE because left hand limit  $\neq$  right hand limit don't agree.

d)  $f(3) = 1$

② a)  $\lim_{x \rightarrow 4^-} g(t) = 5$

b)  $\lim_{x \rightarrow -4^+} g(t) = 2$

c)  $\lim_{x \rightarrow -4} g(t)$  DNE

d)  $g(-4) = 2$

③ a)  $\lim_{h \rightarrow 0^-} f(h) = -4$

b)  $\lim_{h \rightarrow 0^+} f(h) = -4$

c)  $\lim_{h \rightarrow 0} f(h) = -4$

d)  $f(0) = -4$

④ a)  $\lim_{s \rightarrow -2^-} p(s) = 3$

b)  $\lim_{s \rightarrow -2^+} p(s) = 3$

c)  $\lim_{s \rightarrow -2} p(s) = 3$

d)  $p(-2) = 3$

5) a)  $\lim_{x \rightarrow 0^-} F(x) = 4$

b)  $\lim_{x \rightarrow 0^+} F(x) = -3$

c)  $\lim_{x \rightarrow 0} F(x) = \text{DNE}$

d)  $F(0) = 4$

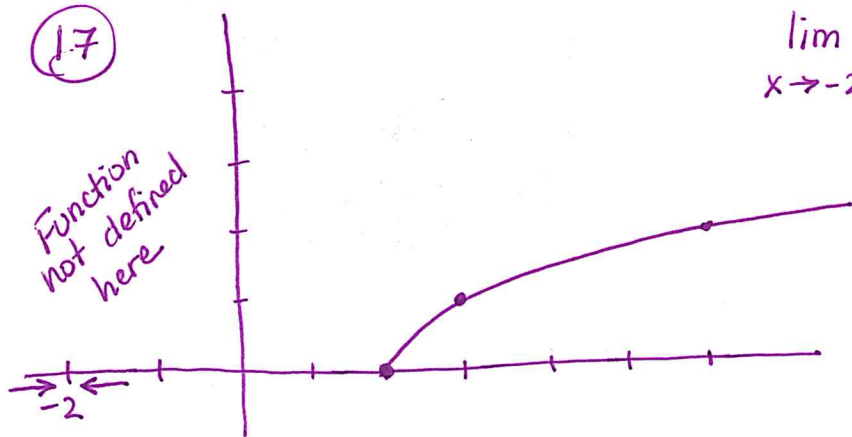
6)  $\lim_{x \rightarrow 2^-} G(x) = 1$

$\lim_{x \rightarrow 2^+} G(x) = 1$

$\lim_{x \rightarrow 2} G(x) = 1$

$G(2) = 3$

17

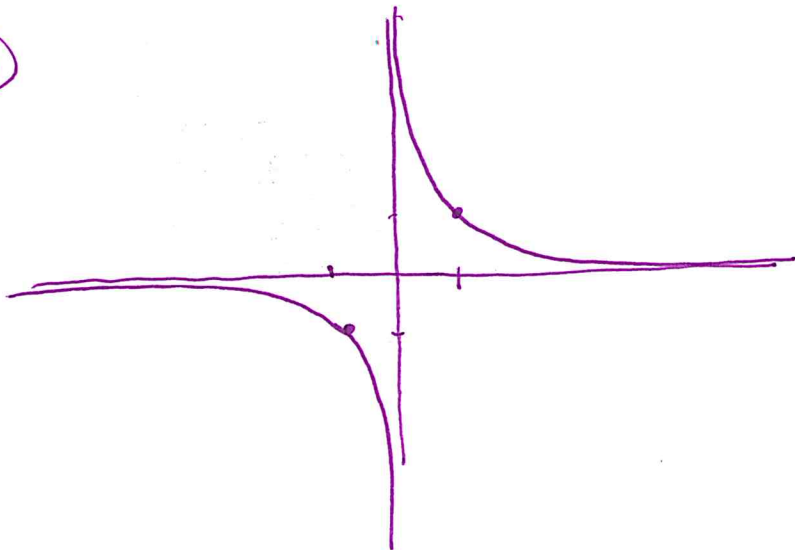


$\lim_{x \rightarrow -2} \sqrt{x-2}$  DNE

Function is not defined at points near  $x = -2$

Cannot use substitution b/c the expression  $\sqrt{x-2}$  is not defined for  $x = -2$ .

18



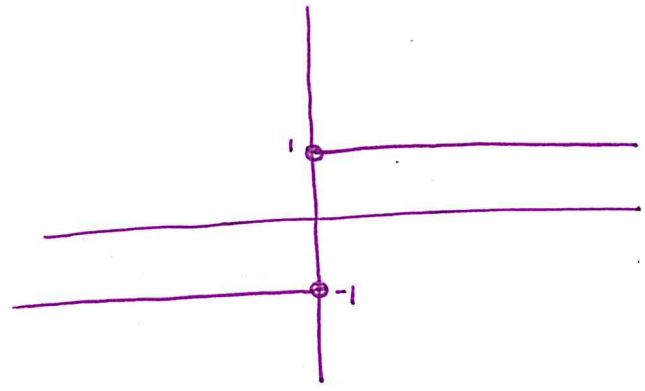
$\lim_{x \rightarrow 0} \frac{1}{x^2}$  cannot use substitution because division by 0.

Limit DNE - left hand limit and right hand limit don't exist.

19

$$\lim_{x \rightarrow 0} \frac{|x|}{x}$$

cannot use substitution b/c division by 0.



$$\lim_{x \rightarrow 0^-} \frac{|x|}{x} = -1$$

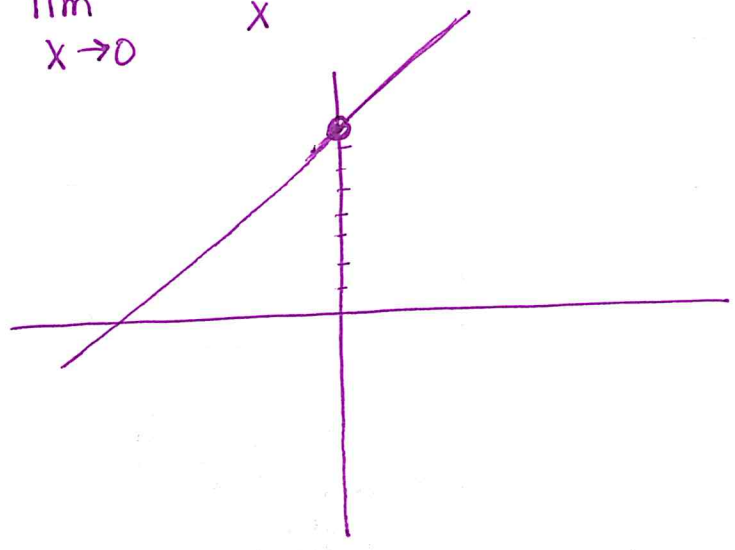
$$\lim_{x \rightarrow 0^+} \frac{|x|}{x} = 1$$

$$\lim_{x \rightarrow 0} \frac{|x|}{x} \text{ DNE}$$

20

$$\lim_{x \rightarrow 0} \frac{(4+x)^2 - 16}{x}$$

cannot use substitution b/c division by 0



$$\frac{(4+x)^2 - 16}{x} = \frac{16 + 8x + x^2 - 16}{x}$$

$$= \frac{8x + x^2}{x}$$

$$= 8 + x$$

$$\lim_{x \rightarrow 0^-} f(x) = 8$$

$$\lim_{x \rightarrow 0^+} f(x) = 8$$

$$\boxed{\lim_{x \rightarrow 0} f(x) = 8}$$

31

a) ~~False~~ True

b) True

c) False  $\lim_{x \rightarrow 0^-} f(x) = 0$

d) True

e) True

f) True

g) False  $\lim_{x \rightarrow 0} f(x) = 0$

h) False Does not exist

i) False

ii) False

32

a) True

b) False

c) False

d) True

e) True

f) True

g) True

h) True

i) True