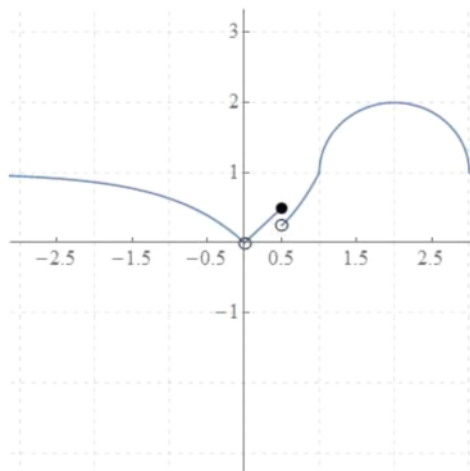


No calculators are allowed on this quiz. Please read each question carefully, follow directions and clearly mark your solutions. **Show your work for full credit.**

1. (4 points) For the function  $f(x)$  graphed below, find the following (justify your answer if the limit does not exist)



(a)  $f(0)$  DNE  
Since 0 is not in domain

(c)  $\lim_{x \rightarrow 0.5} f(x)$  DNE since the one sided limits are different

(b)  $\lim_{x \rightarrow 1} f(x) = 1$

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

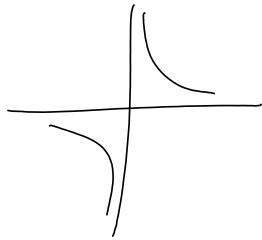
2. (6 points) Find the limits:

$$(a) \lim_{x \rightarrow -2} \frac{x^2 - x - 6}{x^2 + x - 2} = \lim_{x \rightarrow -2} \frac{\cancel{(x+2)}(x-3)}{\cancel{(x+2)}(x-1)} \quad \frac{(-2)^2 - (-2) - 6}{(-2)^2 + (-2) - 2} = \frac{0}{0}$$

$$= \lim_{x \rightarrow -2} \frac{x-3}{x-1} = \frac{-2-3}{-2-1} = \frac{-5}{-3} = \boxed{\frac{5}{3}}$$

$$(b) \lim_{x \rightarrow \infty} \frac{3x^2 + 7x - 2}{-x^2 + 3} \cdot \frac{\frac{1}{x^2}}{\frac{1}{x^2}} = \lim_{x \rightarrow \infty} \frac{3 + \frac{7}{x} - \frac{2}{x^2}}{-1 + \frac{3}{x^2}} = \frac{3}{-1} = \boxed{-3}$$

$$(c) \lim_{x \rightarrow 0^+} \frac{1}{x} = \boxed{+\infty}$$



$$(d) \lim_{x \rightarrow 1^-} \frac{x - \sqrt{x}}{x - 1} \cdot \frac{x + \sqrt{x}}{x + \sqrt{x}} \qquad \frac{1-1}{1-1} = \frac{0}{0}$$

$$= \lim_{x \rightarrow 1^-} \frac{x^2 - x}{(x-1)(x+\sqrt{x})}$$

$$= \lim_{x \rightarrow 1^-} \frac{x \cancel{(x-1)}}{\cancel{(x-1)}(x+\sqrt{x})} = \lim_{x \rightarrow 1^-} \frac{x}{x+\sqrt{x}} = \frac{1}{1+1} = \boxed{\frac{1}{2}}$$