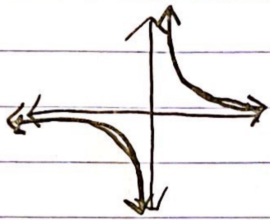
17C HW: C.1 # 7def, C.2 #1, 2

7d.) $\lim_{h \to 0} \frac{2h^2+6h}{h} = 2h+6 = \boxed{6}$

e.) $\lim_{h \to 0} \frac{3h^2-4h}{h} = 3h-4 = \boxed{-4}$

f.) $\lim_{h \to 0} \frac{h^3-8h}{h} = h^2-8 = \boxed{-8}$

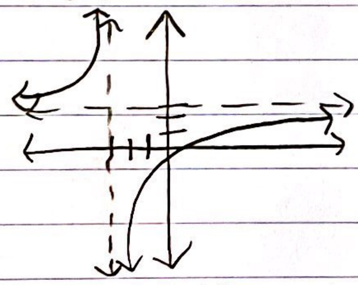
1.) a.) $f(x) = \frac{1}{x}$



As $x \to \infty$, $f(x) \to 0$
As $x \to -\infty$, $f(x) \to 0$

$\therefore \lim_{x \to -\infty} \frac{1}{x} = \lim_{x \to \infty} \frac{1}{x} = \boxed{0}$

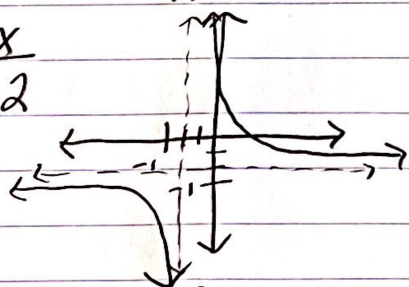
b.) $f(x) = \frac{3x-2}{x+3}$



As $x \to \infty$, $f(x) \to 3$
As $x \to -\infty$, $f(x) \to 3$

$\therefore \lim_{x \to -\infty} \frac{3x-2}{x+3} = \lim_{x \to \infty} \frac{3x-2}{x+3} \boxed{=3}$

c.) $f(x) = \frac{1-2x}{3x+2}$

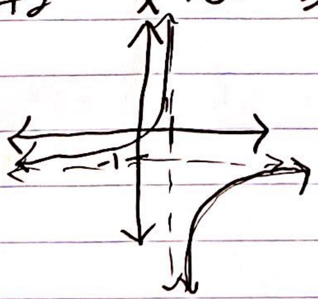


As $x \to \infty$, $f(x) \to \frac{-2}{3}$

As $x \to -\infty$, $f(x) \to \frac{-2}{3}$

$\therefore \lim_{x \to -\infty} \frac{1-2x}{3x+2} = \lim_{x \to \infty} \frac{1-2x}{3x+2} = \boxed{\frac{-2}{3}}$

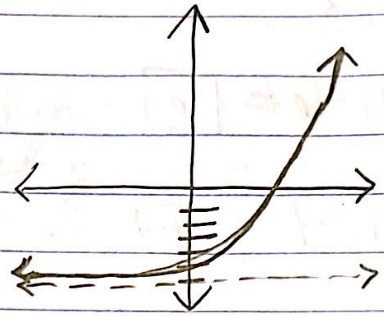
d.) $f(x) = \frac{x}{1-x}$



As $x \to \infty$, $f(x) \to -1$
As $x \to -\infty$, $f(x) \to -1$

$\therefore \lim_{x \to -\infty} \frac{x}{1-x} = \lim_{x \to \infty} \frac{x}{1-x} = \boxed{-1}$

2.) $y = e^x - 6$



b.) $\lim_{x \to -\infty} (e^x - 6) = \boxed{-6}$

$\lim_{x \to \infty} (e^x - 6) = \text{dne}$

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