Math 12H homework

12.1 p 889:

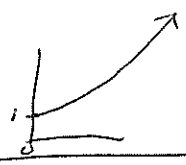
#2) $\lim_{x \to 2} \frac{x-2}{x^2+x-6}$

x	1.9	1.99	1.999	2.001	2.01	2.1
$f(x)$	.20408	.20040	.20004	.19996	.19960	.19608

$\lim_{x \to 2} \frac{x-2}{x^2+x-6} = \boxed{.2}$

#8) $\lim_{x \to 1} \frac{x^3-1}{x^2-1} = \boxed{1.5}$

x	.9	.99	.999	1.001	1.01	1.1
$f(x)$	1.42632	1.49251	1.49905	1.50075	1.50751	1.57619



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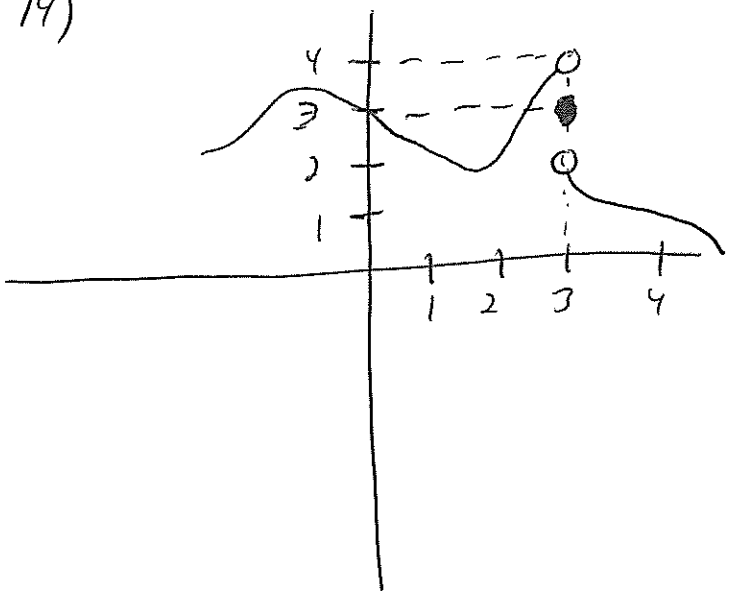
14)



a) $\lim_{x \to 0} f(x) = 3$

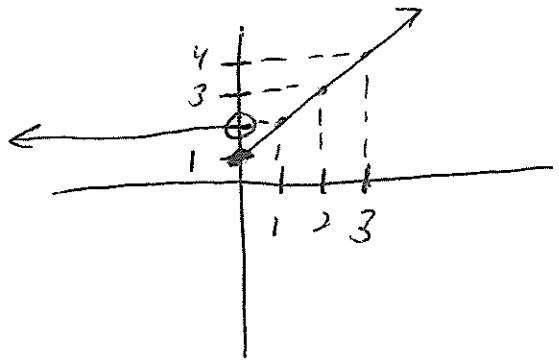
b) $\lim_{x \to 3^-} f(x) = 4$

c) $\lim_{x \to 3^+} f(x) = 2$

d) $\lim_{x \to 3} f(x) =$ D.N.E. (Left and right limits are different)

e) $f(3) = 3$

24) $f(x) = \begin{cases} 2 & \text{if } x < 0 \\ x+1 & \text{if } x \geq 0 \end{cases}$



a) $\lim_{x \to 0^-} f(x) = 2$

b) $\lim_{x \to 0^+} f(x) = 1$

c) $\lim_{x \to 0} f(x) = \text{D.N.E.}$

p. 897

#1) $\lim_{x \to a} f(x) = -3$ $\lim_{x \to a} g(x) = 0$ $\lim_{x \to a} h(x) = 8$

a) $\lim_{x \to a} [f(x) + h(x)] = -3 + 8 = \boxed{5}$

b) $\lim_{x \to a} [f(x)]^2 = (-3)^2 = \boxed{9}$

c) $\lim_{x \to a} \sqrt[3]{hx} = \sqrt[3]{8} = \boxed{2}$

d) $\lim_{x \to a} \frac{1}{f(x)} = \frac{1}{-3} = \boxed{-\frac{1}{3}}$

e) $\lim_{x \to a} \frac{f(x)}{h(x)} = \frac{-3}{8} = \boxed{-\frac{3}{8}}$

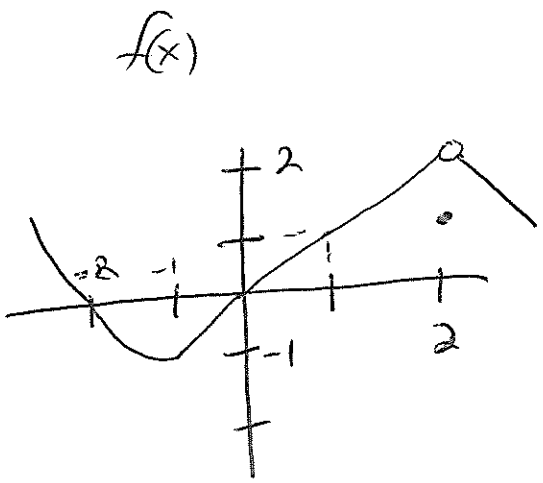
f) $\lim_{x \to a} \frac{g(x)}{f(x)} = \frac{0}{-3} = \boxed{0}$

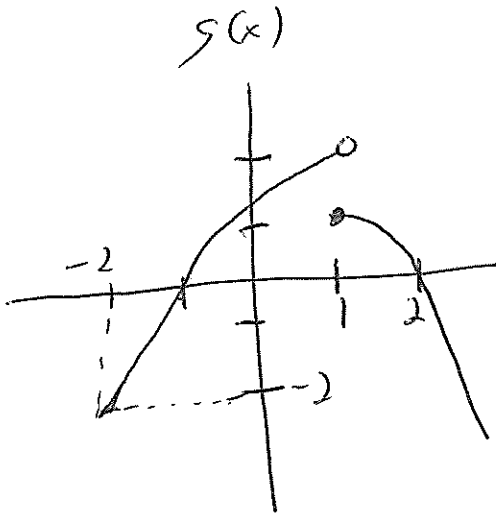
g) $\lim_{x \to a} \frac{f(x)}{g(x)} = \frac{-3}{0} = \boxed{\text{D.N.E}}$ can't divide by zero

h) $\lim_{x \to a} \frac{2f(x)}{h(x) - f(x)} = \frac{2(-3)}{8 - -3} = \boxed{\frac{-6}{11}}$

Math 12H homework

p 597
#2)





2a) $\lim_{x \to 2} [f(x) + g(x)] = 2 + 0 = \boxed{2}$

2b) $\lim_{x \to 1} [f(x) + g(x)] = 1 + DNE = \boxed{D.N.E.}$

2c) $\lim_{x \to 0} [f(x) \cdot g(x)] = 0 \cdot (\text{finite}) = \boxed{0}$

2d) $\lim_{x \to -1} \frac{f(x)}{g(x)} = \frac{-1}{0} = \boxed{D.N.E.}$

2e) $\lim_{x \to 2} x^3 f(x) = 2^3 \cdot (2) = \boxed{16}$
($x \to 2^3$, $f(x) \to 2$)

2f) $\lim_{x \to 1} \sqrt{3 + f(x)} = \sqrt{3+1} = \boxed{2}$
($f(x) \to 1$)