

2.4.32: $\lim_{x \rightarrow 1^+} g(x) = \lim_{x \rightarrow 1^+} x-1 = 0$
 $\lim_{x \rightarrow 1^-} g(x) = \lim_{x \rightarrow 1^-} -x+1 = 0$
 $\Rightarrow \lim_{x \rightarrow 1} g(x) = 0$

(b) $g(1) = DNE$ (d) $\lim_{x \rightarrow 2^+} g(x) = \lim_{x \rightarrow 2^+} (5-x^3) = 1$
 (c) $\lim_{x \rightarrow 2^-} g(x) = \lim_{x \rightarrow 2^-} (x-1) = 1 \neq \lim_{x \rightarrow 2^+} g(x)$
 $\Rightarrow \lim_{x \rightarrow 2} g(x) = \underline{\underline{DNE}}$

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a) $f(1) = DNE$ b) $\lim_{x \rightarrow 1^+} f(x) = \lim_{x \rightarrow 1^+} (1-x) = 0$
 c) $\lim_{x \rightarrow 1^-} f(x) = \lim_{x \rightarrow 1^-} x = 1$ d) $\lim_{x \rightarrow -1^+} f(x) = \lim_{x \rightarrow -1^+} x = -1$
 $\lim_{x \rightarrow -1^-} f(x) = \lim_{x \rightarrow -1^-} x^3 = (-1)^3 = -1$
 $\Rightarrow \lim_{x \rightarrow -1} f(x) = -1$

2.6.36

$\lim_{x \rightarrow 2} \frac{f(x) - f(2)}{x - 2} = \lim_{x \rightarrow 2} \frac{3/x^2 - 3/4}{x - 2} = \lim_{x \rightarrow 2} \frac{(12 - 3x^2)}{4x^2(x-2)}$
 $= \lim_{x \rightarrow 2} \frac{-3(x^2 - 4)}{4x^2(x-2)} = \lim_{x \rightarrow 2} \frac{-3(x/2)(x+2)}{4x^2(x/2)} = \lim_{x \rightarrow 2} \frac{-3(x+2)}{4x^2} = -\frac{3}{4} //$

2.6.36

a) $f(x) = \frac{1}{x}$, $g(x) = -\frac{1}{x}$ $\lim_{x \rightarrow 0} f(x) = DNE$ $\lim_{x \rightarrow 0} g(x) = DNE$
 $\lim_{x \rightarrow 0} (f(x) + g(x)) = \lim_{x \rightarrow 0} \left(\frac{1}{x} - \frac{1}{x} \right) = \lim_{x \rightarrow 0} 0 = 0 //$
 b) $f(x) = 1/x$, $g(x) = x$ $\lim_{x \rightarrow 0} f(x) = DNE$
 $\lim_{x \rightarrow 0} (f(x) \cdot g(x)) = \lim_{x \rightarrow 0} \left(\frac{1}{x} \cdot x \right) = \lim_{x \rightarrow 0} 1 = 1 //$

2.7.14 $\lim_{t \rightarrow 0} \cos t = \cos 0 = 1$

$\lim_{t \rightarrow 0} \sin t = 0$ are both shown
 $\lim_{h \rightarrow 0} \cos t = \lim_{h \rightarrow 0} \cos(h+c) = \lim_{h \rightarrow 0} (\cos c \cosh - \sin c \sinh)$
 $= \cos c \lim_{h \rightarrow 0} \cosh - \sin c \lim_{h \rightarrow 0} \sinh = \cos c //$

2.7.18

(a) $\lim_{t \rightarrow 0} P/E = \frac{0}{0}$ hence we need to be careful.
 I guess a number between 0 & 1.
 b) $\frac{D}{E} = \frac{\frac{1}{2} \sin t (1 - \cos t)}{\frac{1}{2} t^2 - \frac{1}{2} \sin t \cos t} = \frac{\sin t (1 - \sin t \cos t)}{t^2 - \sin t \cos t}$
 c) $\lim_{t \rightarrow 0} \frac{D}{E} = \frac{3}{4}$ (I used another method!! you are supposed to use your calculator)