

Totally Terrific Limits Sheet

1. Determine an expression for each of the following limits. (Assume appropriate limits on x so that the expressions are not undefined).

a) $\lim_{h \rightarrow 0} \frac{3(x+h)-3x}{h}$

b) $\lim_{h \rightarrow 0} \frac{(x+h)^2-3(x+h)+2-(x^2-3x+2)}{h}$

c) $\lim_{h \rightarrow 0} \frac{4+2(x+h)-3(x+h)^2-(4+2x-3x^2)}{h}$

d) $\lim_{h \rightarrow 0} \frac{(x+h)^3+3(x+h)-(x^3+3x)}{h}$

e) $\lim_{h \rightarrow 0} \frac{\sqrt{3(x+h)-1}-\sqrt{3x-1}}{h}$

f) $\lim_{h \rightarrow 0} \frac{\sqrt{5(x+h)+3}-\sqrt{5x+3}}{h}$

g) $\lim_{h \rightarrow 0} \frac{\frac{2}{x+h}-\frac{2}{x}}{h}$

h) $\lim_{h \rightarrow 0} \frac{\frac{3}{2(x+h)-5}-\frac{3}{2x-5}}{h}$

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