Rep.kurs i 5B1115 Matematik II

Lösning LS1 3/6 04

Höger: $f'(x) = \lim_{h\to 0} \frac{f(x+h)-f(x)}{h} =$

$\lim_{h\to 0} \frac{1}{h}(2(x+h) + \frac{3}{x+h} - 2x - \frac{3}{x}) =$

$\lim_{h\to 0} \frac{1}{h}(2x + 2h - 2x + \frac{3x - 3(x+h)}{x(x+h)}) =$

$\lim_{h\to 0} \frac{1}{h}(2h + \frac{-3h}{x(x+h)}) == \lim_{h\to 0}(2 + \frac{-3}{x(x+h)}) = \underline{2 - \frac{3}{x^2}}.$

Vänster: $f'(x) = \lim_{h\to 0} \frac{f(x+h)-f(x)}{h} =$

$\lim_{h\to 0} \frac{1}{h}(3(x+h) + \frac{2}{x+h} - 3x - \frac{2}{x}) =$

$\lim_{h\to 0} \frac{1}{h}(3x + 3h - 3x + \frac{2x - 2(x+h)}{x(x+h)}) =$

$\lim_{h\to 0} \frac{1}{h}(3h + \frac{-2h}{x(x+h)}) == \lim_{h\to 0}(3 + \frac{-2}{x(x+h)}) = \underline{3 - \frac{2}{x^2}}.$