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Find the derivative by the limit process worksheet

At this point we should have at least a basic understanding of limitations and how to reach some limitations. However, I have only limitations really discussed by themselves and not how they relate to the rest of calculation. They are very important in calculations because they are used to define the most important calculation scope. For example, the main topic that will be discussed for some time is to derive. Derivatives are coming off a lot of different environments, such as finding rates of change, instant rates of change, speed, slope, and a few others. The main thing to realize is that a derive is generally used to find out how quickly, or slowly, something will change. I'll go further into everything later, but for now I want to focus on the definition of derivative and how to get a derive using the definition. The definition of a derive if we have some functions, \(f(x)\), we would write derive to f as \(f'(f'(x)\). And we would define the f derive by using this limit: $$f'(x)=\lim_{h\0} frac {frac{f(x+h)-f(x)}$ This limit can be a bit confusing, so there's something I'd like to point out before we actually start working with this limit. The confusing thing here is that we have \(x\) and \(h\) at this limit and it looks as if they are both variables. However, when we reach this limit, we can only process \(h\) as a variable. We'll need to treat x as a constant and h as the variable only. The reason for this is that we're finding the limit as \(h\) going to \(0\). This tells us that \(h\) is moving in the direction \(0\). It doesn't tell us that \(x\) will change at all. Therefore, when we are working with the limit, we will act as if \(x\) is a number, or a constant. This means that once we get the limit, our response can have \(x\) of it consistently and this is completely fine since \(x\) is not variable in this case. Now let's try an example. Example 1 Consider the function \ (f(x) = 4x^2 - 7x + 12\). We'll use the limited definition to get derive from this function, but the first we break it down and consider each part on its own. Find f(x+h) The point thing we need to find is \(f(x+h)\). This notation basically just means that we need to look at our function \(f\), and the \plug-in\((x+h)\wherever we see the Input. In other words, we need to replace all of the \(x\) in the function and \((x+h)\ in. So$ $f (x+h) = 4 (x+h) ^2 – 7 (x + h) + 12.$ Then we'll want to expand this out so it's easier to work with. Remember \((x+h)^2\) is the same as \((x+h) (x + h)\), which means we need to paper it. $$f(x+h) = 4 (x+h) (x+h) – 7 (x+h) + 12$$ = 4 (x^2 + xh + xh + h^2) - 7 (x+h) + 12 =$4(x^2+2xh+h^2)-7(x+h)+$=4x^2+8xh +4h^2 – 7x - 7h + 12$ since there is no like theme will leave it at that for now. Put it all together now, we put this into the rest of the equation. Since we now know \ (f(x + h))) and \(f(x)\), we can plug these into the equation. I would recommend that enthusiast each of them with a set of brackets so you don't forget to distribute the negative signs in front of the \(f(x)\). This is a very common mistake, so be careful not to forget that because it will give you the wrong answer. $$f'(x)=\lim_{h\0}\frac{frac{f(x+h)-f(x)}$=\lim_{h\0}\frac{(4x ^2+8xh +4h^2 - 7x - 7h + 12) - (4x^2 - 7x + 12) } }$ Resolve the limit When I see a limit, the first thing I usually consider is whether we can simply plug in \(0\)to\(h\). Essentially, I try to treat this function as if it was continuous in \(h=0\) (remember \(h\(h\) is the variable here). However, if we do this here we will get \(0\) on the denominator. Since you cannot be divided by 0, this won't work. So our strategy will simplify this fraction to a point where we can plug in \(0\)to\(h\). The simplest way to do this is for the numerator appointment so we cancel a \ (h\(h\) from the numerator and denominator and get rid of the fraction we all together.$$f'(x)=\lim_{h\0}\frac{4x^2+8xh +4h^2 - 7x - 7h + 12 - 4x^2 + 7x – 12 }$= \lim_{h\0}\frac{8xh+4h^2 - 7h}}$ At this point I would like to point something out. Notice, after simplifying the numerator of the fraction, each remaining term has a \(h\) in it. This is important because it allows us the \factor (h\ to exit and cancel it with the \(h\) of the denominator, getting rid of the fraction. This will be a very common strategy to use for getting derive to a function using the limit definition.$$f'(x)=\lim_{h\0}\frac{h(8x+4h-7)}$= \lim_{h\0}8x+4h -$7$Now , we have simplified to a point that we can resolve this limitation by plug\(0\) in to \(h\). $$f'(x)=8x+4(0)-7$=8x – 7 so we've just shown that if \(f(x) = 4x^2-7x + 12\), then \(f'(x)=8x-7\). We'll later learn shortcuts like the product rule, quotient rules, and dog rules that will make getting derive like this much simpler and faster, but you'll need to know how to find these using the limit definition. Patterns pointing to this issue are a common one. It won't work for all derivatives, but it's a good thing to try first. It's generally a good idea to see if you can dismiss the top of the fraction in such a way that each term contains \(h\\) as a factor. Then you can factor out the \(h\), and cancel it with the \(h\) on the bottom of the fraction. This usually leaves you with a function that you can directly outlet \(0\) to \(h\) and simplify from there, leaving you with a function that doesn't include any \(h\)'s, but usually has the \(x\). Enter your email below and I'll send you my calculation 1 study guide charging Tricks and shortcuts help you boost your score of calculation! I would recommend checking out the other material I have on derive. 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