Let's differentiate some functions

TOTAL POINTS 5

1.Question 1

In the following quiz, you'll apply the rules you learned in the previous videos to differentiate some functions.

We learned how to differentiate polynomials using the power rule: d/dx ax^{b} = abx^{b-1}. It might be helpful to remember this as 'multiply by the power, then reduce the power by one'.

Using the power rule, differentiate f(x) = x^{173}

1 / 1 point

○ f'(x) = 172x^{173}

○ f'(x) = 171x^{173}

○ f'(x) = 174x^{172}

◉ f'(x) = 173x^{172}

2.Question 2

The videos also introduced the sum rule: (d/dx) [f(x)+g(x)] = (d/dx)f(x) + (d/dx)g(x).

This tells us that when differentiating a sum we can just differentiate each term separately and then add them together again. Use the sum rule to differentiate f(x) = x^2 + 7 + 1/x

1 / 1 point

○ f'(x) = 2x + 1/x

◉ f'(x) = 2x − 1/x^2

○ f'(x) = 2x + 1/x^2

○ f'(x) = 2x + 7 - 1/x^2

3.Question 3

In the videos we saw that functions can be differentiated multiple times. Differentiate the function f(x) = e^x + 2\sin(x) +x^3 twice to find its second derivative, f''(x)

1 / 1 point

○ f''(x) = e^x + sin(x) + 3x^2

○ f''(x) = xe^{x-1} - 2cos(x) + 6x

◉ f''(x) = e^x -2sin(x) + 6x

$\bigcirc$ f''(x) = e^x + 2cos(x) + 3x^2

4.Question 4

Previous videos introduced the concept of an anti-derivative. For the function f'(x), it's possible to find the anti-derivative, *f*(*x*), by asking yourself what function you'd need to differentiate to get f'(x). For example, consider applying the "power rule" in reverse: You can go from the function abx^{b-1} to its anti-derivative ax^{b}.

Which of the following could be anti-derivatives of the function f'(x) = x^4 - sin(x) - 3e^x? (Hint: there's more than one correct answer...)

1 / 1 point

☑ f(x) = 1/5x^5 + cos(x) - 3e^x + 4

☑ f(x) = 1/5x^5 + cos(x) - 3e^x - 12

☐ f(x) = 4x^3 - cos(x) - 3e^x

☐ f(x) = 5x^5 - sin(x) + 3e^{x} + 7

☐ f(x) = 1/5x^5 - cos(x) - 3e^x + 1

5.Question 5

The power rule can be applied for any real value of *b*. Using the facts that , calculate d/dx(\sqrt{x})

1 / 1 point

$\odot$ d/dx (sqrt(x)) = 1/2sqrt(x)