

Calculate the derivatives of the following functions:

1) $f(x) = 2x^3 - 5x^2 + 23$

2) $g(x) = (x^2 - 2x + e^x) \left(\frac{1}{x} - e^x \right)$

3) $V(x) = \frac{4}{3} \pi x^3$ (Does this function and its derivative look familiar?)

4) $h(x) = \frac{x^2 - 1}{x - 1}$ (Try NOT simplifying, what you can say about the domain of h' ?)

5) $M(x) = \frac{(x + b^x)}{(x^e + e^x)}$

6) How about $|x|$ or $\lfloor x \rfloor$?

7) Compare the results of derivating $\sin(x^2)$ vs $\sin^2(x)$