

1. Determine  $f'(a)$  for the following functions:

(a)  $f(x) = 9x^2 + x + 1$

(b)  $f(x) = 5x - 100$

(c)  $f(x) = x^4 + x^2 + 1$

(d)  $f(x) = -8x^5 + x^6 - x + 2$

2. Find the derivative of  $f(x)g(x)$  for the following  $f$  and  $g$ :

(a)  $f(x) = x^3 - 4x + 1$ ,  $g(x) = x^2$

(b)  $f(x) = 10 - x - x^2$ ,  $g(x) = f(x)$

(c)  $f(x) = x^6 + 3x^3 + 1$ ,  $g(x) = 5$

(d)  $f(x) = -8x^5 + x^6 - x + 2$