

SHOW ALL WORK.

Find the derivative of the following functions.

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

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

2. (5 points) $f(x) = \frac{1 + x - 4\sqrt{x}}{x}$

$$\begin{aligned} f'(x) &= \frac{(x)(1 + x - 4\sqrt{x})' - (1 + x - 4\sqrt{x})(x)'}{x^2} \\ &= \frac{(x)(1 - 2/\sqrt{x}) - (1 + x - 4\sqrt{x})}{x^2}, \end{aligned}$$

or you can rewrite $f(x) = (1 + x - 4\sqrt{x})(x^{-1})$ then use product rule.