Use the product rule to find the derivative, $f'(x)$.

Recall, for $f(x) \cdot g(x)$, the product rule is

$$\frac{d}{dx} [f(x) \cdot g(x)] = f(x) \cdot g'(x) + f'(x) \cdot g(x)$$

1. $\frac{d}{dx} [(7 - 18x)(\sin(x) + x^{-2})]$

   $f(x) = 7 - 18x \quad g(x) = \sin(x) + x^{-2}$
   
   $f'(x) = -18 \quad g'(x) = \cos(x) - 2x^{-3}$

   $$\frac{d}{dx} [(7 - 18x)(\sin(x) + x^{-2})] = (7 - 18x)(\cos(x) - 2x^{-3}) + (-18)(\sin(x) + x^{-2})$$

   You could distribute or simplify to make it look prettier, but at this point the product rule is done.

2. $\frac{d}{dx} [(\sqrt{x} + x^4)(8x^7 + 12x - 6)]$

   $f(x) = x^{1/4} + x^4 \quad g(x) = 8x^7 + 12x - 6$
   
   $f'(x) = \frac{1}{4}x^{-3/4} + 4x^3 \quad g'(x) = 56x^6 + 12$

   $$\frac{d}{dx} [(7 - 18x)(\sin(x) + x^{-2})] = (x^{1/4} + x^4) (56x^6 + 12) + \left(\frac{1}{4}x^{-3/4} + 4x^3\right) (8x^7 + 12x - 6)$$