

Use the rules of differentiation to compute the following derivatives.

1.  $f(x) = (x^2 + 4x + 6)^5$

2.  $f(x) = \sqrt{x^2 - 7x}$

3.  $f(x) = \left(x - \frac{1}{x}\right)^{\frac{3}{2}}$

4.  $f(x) = \sin(3x^2 - x)$

5.  $f(x) = \tan\left(x^4 + 7x^{\frac{1}{2}} - 3x^{-\frac{1}{2}}\right)$

6.  $f(x) = \frac{\sin(x^2)}{\cos(x^3 - x^2)}$

7.  $f(x) = \sec^3(\sqrt{x})$