3.6—Practice with differentiation rules

Find the derivative of each function. Simplify your final answer. In some cases, it may be useful to simplify/rewrite the function before differentiating.

1. \[ y = \frac{1}{4 \sin(x - 3)} \]

2. \[ y = (4t - 3)^{-8} \]

3. \[ f(\theta) = \theta + 2 \tan \sqrt[3]{\theta} \]

4. \[ g(z) = \sqrt[3]{2z - 1} \]

5. \[ h(\alpha) = (4\alpha \cos \alpha)^2 \]

6. \[ y = (4x^3 - 5x^2 + 10x - 13)^3 \]
7. \( f(x) = 3(2e^{5x})^3 (x-1)^4 \)

8. \( g(t) = \frac{(t-3)^2}{\sqrt{t+1}} \)

9. \( y = \left( \frac{4^{2x-1}}{3-x} \right)^3 \)