

Math 131 - Assignment 7

October 16, 2024

Name _____

Score _____

Show all work to receive full credit. Supply explanations when necessary. This assignment is due October 23.

1. Let $f(x) = x^5 + 7x - 9$.

(a) Compute $f^{-1}(-1)$.

(b) Compute $(f^{-1})'(-1)$.

(c) Compute $f^{-1}(11)$. (You'll probably have to use a calculator to approximate the value.)

(d) Compute $(f^{-1})'(11)$.

Turn over.

2. For $x > 0$, let $f(x) = x - \frac{6}{x}$. Find $(f^{-1})'(1)$.

3. Determine each derivative.

(a) $\frac{d}{dx} x^2 \sin^{-1}(x^3)$

(b) $\frac{d}{dt} \frac{7}{e^{5t}}$

(c) $\frac{d}{dx} \ln[(x^2 + 1)^3]$

4. Let $g(x) = (\cos^{-1} x)^2$. Find the exact value (not a decimal approximation) of $g'(1/2)$. Simplify your answer as much as possible.