

Math 231 Worksheet 4

1. Find the *first* and *second* derivatives of the function.

(a) $f(x) = x^2 - 2x + 2^{32}$

(b) $g(t) = \sqrt{t} - \frac{1}{t}$

2. Differentiate the function.

(a) $h(\theta) = 2 \sin \theta \cos \theta$

(b) $y = \frac{x}{x^2 + 1}$

Answers:

$$1.(a) f'(x) = 2x - 2, f''(x) = \boxed{2}$$

$$1.(b) g'(t) = \frac{1}{2}t^{-1/2} + t^{-2}, g''(t) = \boxed{-\frac{1}{4t^{3/2}} - \frac{2}{t^3}}$$

$$2.(a) h'(\theta) = \boxed{2(\cos^2(\theta) - \sin^2(\theta))}$$

$$2.(b) y'(x) = \boxed{\frac{1 - x^2}{(x^2 + 1)^2}}$$