

Calculus I

Name: _____

Study Guide 15

Class: _____

Due Date: _____

Score: _____

No Work \Leftrightarrow No Points

Use Pencil Only \Leftrightarrow Be Neat & Organized

1. Given $f(x) = \frac{2x}{x-3}$.

(a) (2 points) Find the domain of $f(x)$ in interval notation.

(a) _____

(b) (2 points) Find $f'(x)$

(b) _____

(c) (3 points) Find the points on the graph of $f(x)$ where $f'(x) = 0$ or undefined.

(c) _____

(d) (2 points) Find $f''(x)$

(d) _____

(e) (3 points) Find the points on the graph of $f(x)$ where $f''(x) = 0$ or undefined.

(e) _____

2. Given $f(x) = \frac{1}{x^2 + 1}$.

(a) (2 points) Find the domain of $f(x)$ in interval notation.

(a) _____

(b) (2 points) Find $f'(x)$

(b) _____

(c) (2 points) Find the points on the graph of $f(x)$ where $f'(x) = 0$ or undefined.

(c) _____

(d) (2 points) Find $f''(x)$

(d) _____

(e) (2 points) Find the points on the graph of $f(x)$ where $f''(x) = 0$ or undefined.

(e) _____

3. Suppose $\theta = \theta(t)$ and $h = h(t)$, differentiate both sides with respect to t , then solve for $\frac{d\theta}{dt}$.

(a) (2 points) $\tan \theta = \frac{h}{100}$

(a) _____

(b) (2 points) $\sin \theta = \frac{h}{100}$

(b) _____

4. Given $f(x) = (x - 1)^4$.

(a) (2 points) Find $f'(x)$

(a) _____

(b) (2 points) Solve $f'(x) = 0$

(b) _____

(c) (2 points) Find the points on the graph of $f(x)$ where $f'(x) = 0$

(c) _____

(d) (2 points) Find $f''(x)$

(d) _____

(e) (2 points) Solve $f''(x) = 0$

(e) _____

(f) (2 points) Find the points on the graph of $f(x)$ where $f''(x) = 0$

(f) _____

5. Given $f(x) = \frac{x}{x^2 + 1}$.

(a) (2 points) Find the domain of $f(x)$ in interval notation.

(a) _____

(b) (2 points) Find $f'(x)$

(b) _____

(c) (3 points) Find the points on the graph of $f(x)$ where $f'(x) = 0$ or undefined.

(c) _____

(d) (2 points) Find $f''(x)$

(d) _____

(e) (3 points) Find the points on the graph of $f(x)$ where $f''(x) = 0$ or undefined.

(e) _____
