

## Unit 2 Quiz (2.9-2.16) - KU

Please complete the differentiation quiz (application).

1 1 point

$$f(x) = 2x^3 - 3x^2 - 12x + 6$$

What statements are true?

- ☐  $x > 2$  concave up
- ☐  $x = -1$  is a maximum stationary point
- ☐ at  $x = -1$  the gradient is 0
- ☐  $x = 2$  is a minimum turning point stationary point

2 1 point

The car distance is defined using the function  $s = t^3$   
Find the average velocity from  $t = 2$  to  $t = 4$

3 1 point

Prove l'hopital rule with  $f(a)=g(a) = 0$   
Put in the correct order.

☐

$$\vdots \frac{f'(a)}{g'(a)}$$

☐

$$\vdots \lim_{x \rightarrow a} \frac{f(x)}{g(x)}$$

☐

$$\vdots \frac{\lim_{x \rightarrow a} \frac{f(x)-f(a)}{x-a}}{\lim_{x \rightarrow a} \frac{g(x)-g(a)}{x-a}}$$

☐

$$\vdots \lim_{x \rightarrow a} \frac{f(x)-f(a)}{g(x)-g(a)}$$

☐

$$\vdots \lim_{x \rightarrow a} \frac{\frac{f(x)-f(a)}{x-a}}{\frac{g(x)-g(a)}{x-a}}$$

4 1 point

$f(x) = \sqrt{x}$  where  $x = 3$  and  $\Delta x = 0.1$   
What is  $\Delta y$

☐

$$\frac{0.5}{\sqrt{3}} 0.1$$

☐

$$\sqrt{3+0.1} - \sqrt{3}$$

☐

$$\frac{0.5}{\sqrt{3}}$$

☐

$$0.1$$

5

1 point

Water is draining from the bottom of a cone-shaped funnel at the rate of  $1\text{ft}^3/\text{sec}$ . The height of the funnel is 4ft and the radius is 2ft

At what rate is the height of the water in the funnel changing when the height of the water in the funnel is 2ft

- ☐  $\frac{\pi}{8}$
- ☐ Neither
- ☐  $\frac{\pi}{2}$
- ☐  $\frac{\pi}{4}$
- ☐  $\pi$