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JC MATHEMATICS (H2) STUDY TIPS

**COMPARING KEY FEATURES
BETWEEN TURNING POINTS VS
POINTS OF INFLEXION**

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JC_H2Maths_020



11. Overview & Definitions

	Stationary Points $\frac{dy}{dx} = 0$				Non-stationary Points $\frac{dy}{dx} \neq 0$			
$f'(x)$	$+$	0	$-$	$-$	0	$+$	$+$	$+$
$f(x)$								
	$f(x)$ is either max or min.				$f'(x)$ is either max or min.			
	Turning Points				Points of Inflexion			

• Stationary Points

- ✓ They are the points on the curve where the gradient is $= 0$.

• Non-Stationary Points

- ✓ They are the points on the curve where the gradient is $\neq 0$.

• Turning Points

- ✓ They are the stationary points where there is a change in signs of gradient before and after these points.
- ✓ They include maximum and minimum turning points.

$$f'(x) \quad + \quad 0 \quad - \quad \quad - \quad 0 \quad +$$

• Points of Inflexion

- ✓ They are the points on the curve where the gradient is either maximum or minimum in the region around the points.
- ✓ The gradients are either both positive or both negative before and after these points, thus there is no change in signs of gradient.
- ✓ If the gradient at these points is $= 0$, they are called stationary point of inflexion.

Good to know

As stated in the syllabus, finding non-stationary point of inflexion is NOT required.



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Explanation

To differentiate between turning points and points of inflexion, we examine the behavior of y -values and gradients in the surrounding region. At a turning point, the curve achieves a local extremum, meaning the y -value reaches either its greatest or least value locally.

Conversely, at a point of inflexion, the gradient itself reaches its greatest or least value within that immediate region, making it either a local maximum or minimum gradient.

Because the gradient does not change its sign, it remains strictly positive or strictly negative both before and after the point.

In short, turning points represent extreme y -values, whereas points of inflexion represent extreme gradients..

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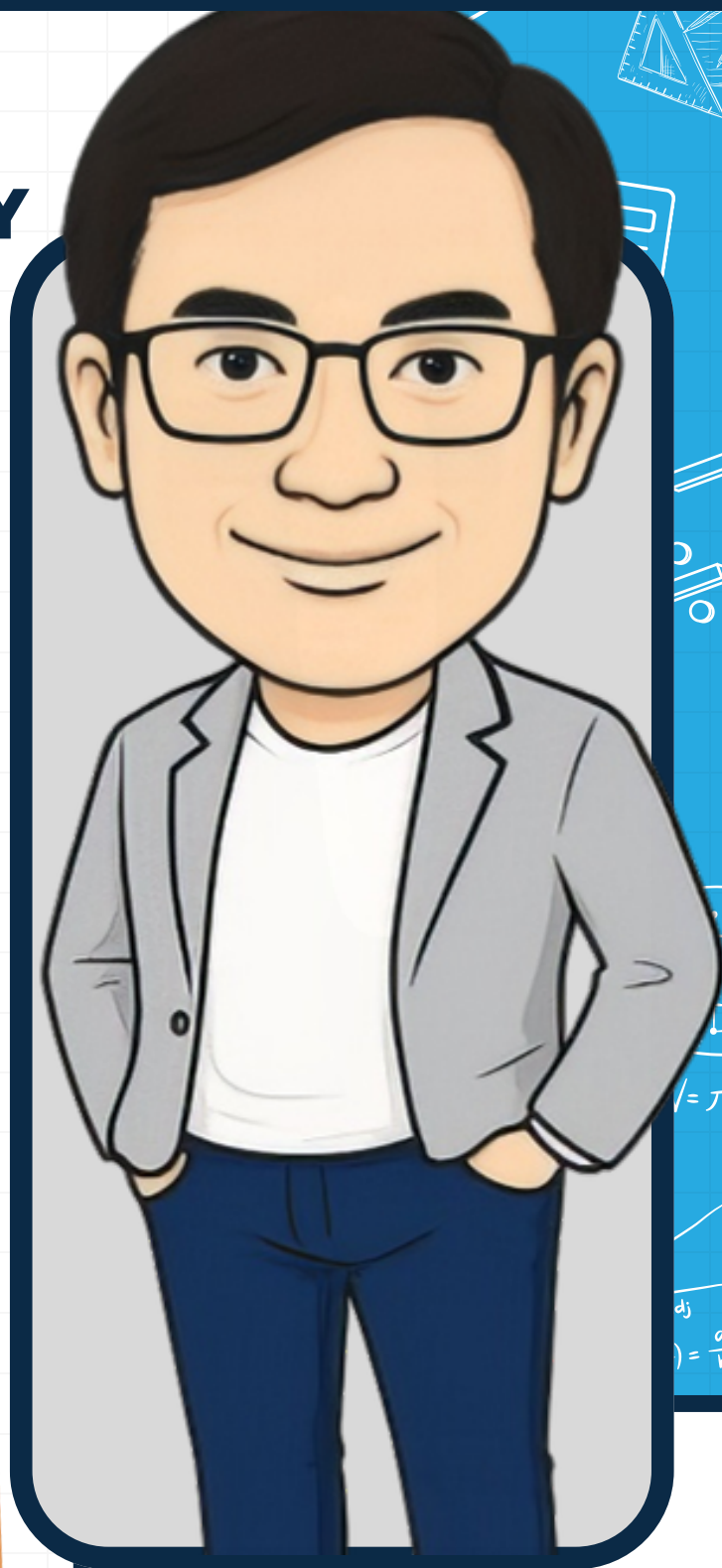
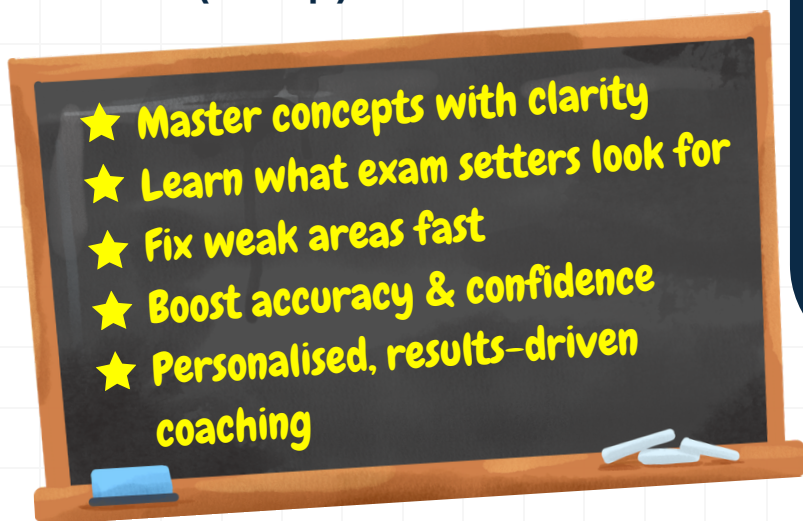
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