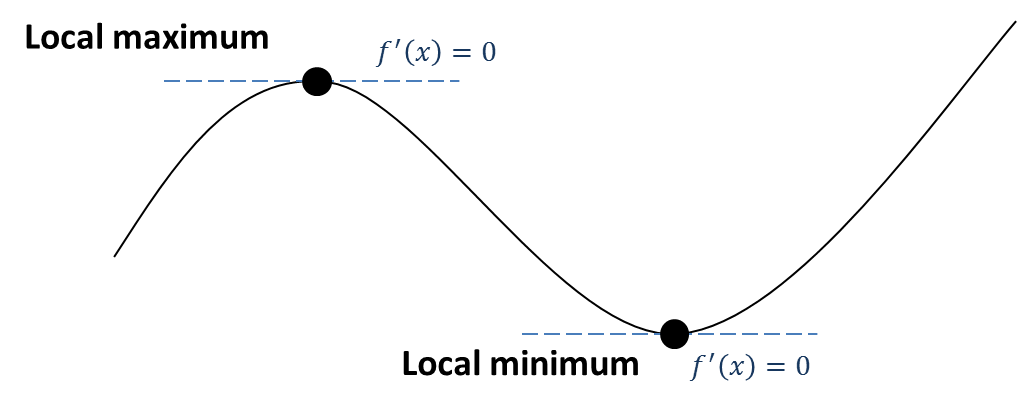
Stationary Points/ Turning Points

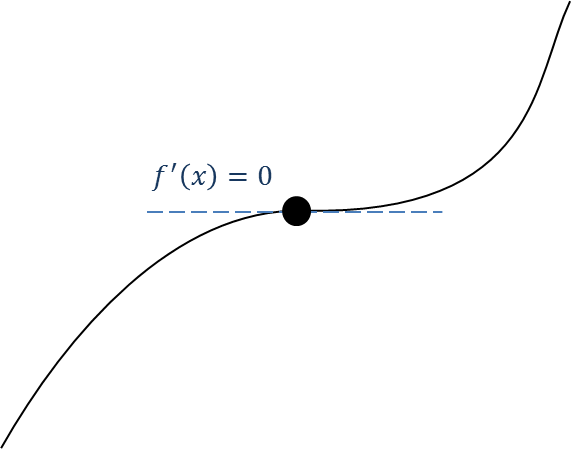


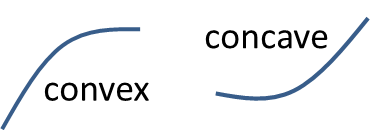
Examples

1. Find the coordinates of the turning points of

2. Find the least value of

3. Find the turning point of

Points of Inflection



How do we tell what type of stationary point?

Method 1: Look at the gradient just before and just after the point

|  |  |  |
| --- | --- | --- |
| **Local Maximum** | | |
| Gradient just before | Gradient at maximum | Gradient just after |
|  |  |  |

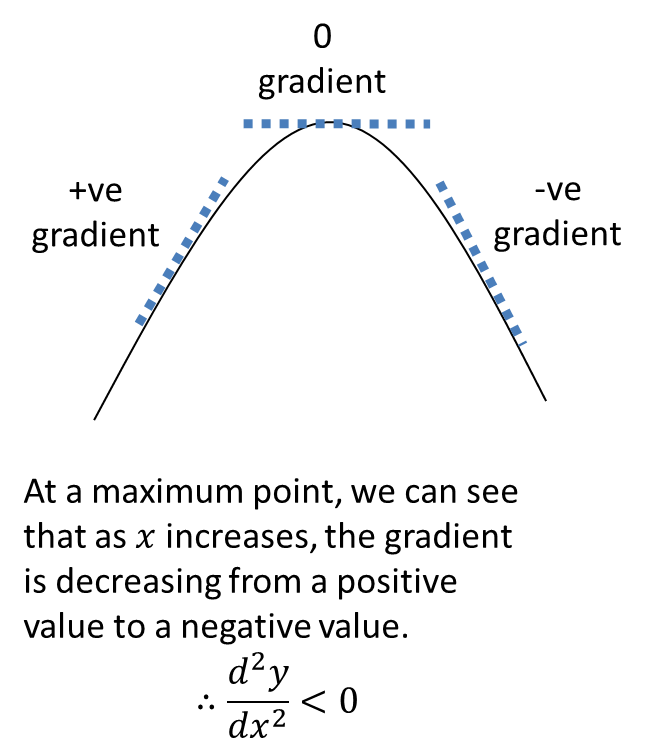
|  |  |  |
| --- | --- | --- |
| **Local Minimum** | | |
| Gradient just before | Gradient at minimum | Gradient just after |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| **Point of Inflection** | | |
| Gradient before | Gradient at p.o.i | Gradient just after |
|  |  |  |

Example:

Find the stationary point on the curve with equation , and determine whether it is a local maximum, a local minimum or a point of inflection.

Method 2: Using the second derivative

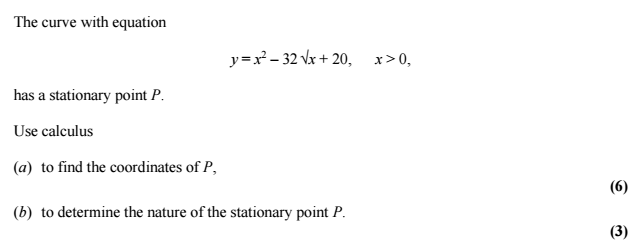


At a stationary point :

* If the point is a local minimum.
* If the point is a local maximum.
* If it could be any type of point, so resort to Method 1.

Example:

The stationary point of is . Use the second derivative to classify this stationary point.

Test Your Understanding:

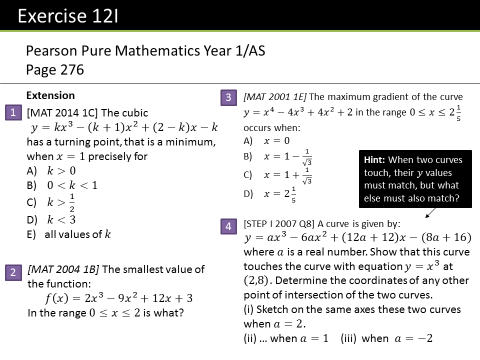
Sketching Graphs

We can sketch graphs to help classify stationary points.

Example

By first finding the stationary points, sketch the graph of

Extension



Ex 12I page 276