

# Geometrical applications of differentiation

If  $f'(x) = 0$  and  $f''(x) = 0$

## QUESTION 1

- a If  $f'(a) = 0$  and  $f''(a) = 0$  then the stationary point at  $x = a$  could be a \_\_\_\_\_  
or a \_\_\_\_\_ or a \_\_\_\_\_.
- b To determine the nature of a stationary point if  $f'(a) = 0$  and  $f''(a) = 0$  it is necessary to \_\_\_\_\_  
\_\_\_\_\_.

## QUESTION 2 Find the stationary points and determine their nature:

a  $y = 3x^3 - 7$

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

c  $y = \frac{x^4}{4} - \frac{4x^3}{3} + 2x^2 - 1$

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

b  $y = x^4 + 2$

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---