

Essential Skills 5

The skills in this series of worksheets appear frequently.

These are the GIFTS you must take to succeed



Stationary Points

Find the co-ordinates and determine the nature of the stationary points:

1. $y = x^3 - 3x^2$

2. $f(x) = x^3 - 12x$

3. $f(x) = x^3 + 9x^2 + 24x - 18$

4. $y = 2x^3 - 7x^2 + 4x + 4$

5. $y = 2x^3 - 3x^2 - 36x + 17$

6. $f(x) = x^2(2x - 3)$

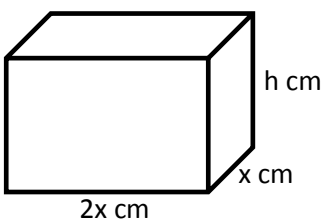
7. $f(x) = x^3 - 2x^2 - 4x + 1$

8. $y = (x - 1)(x - 2)^2$

9. $y = x(27 - x^2)$

10. $f(x) = 2x^2(2 - x^2)$

APPLYING QUESTIONS



1. An open top box measures x cm by $2x$ cm and has a depth of h cm. The outer surface has an area of 216cm^2 .
 - (a) Show that the volume of the cuboid is given by $V(x) = 72x - \frac{2}{3}x^3$
 - (b) Find the value of x for which the volume is a maximum and calculate the volume.

2. A function f is defined by $f(x) = x(x^2 - 3)$, where $0 \leq x \leq 3$.

Find the maximum and minimum values of f .