

Curve sketching (3)

QUESTION 1 Consider the curve $y = x + \frac{9}{x}$

a Write down the natural domain.

b Find the stationary points of the curve and determine their nature.

c Show that there are no points of inflexion.

d Investigate the behaviour of the curve for values of x close to zero.

e The curve will tend to imitate $y = x$ for large values of x . Briefly explain why this is so.

f Sketch the curve $y = x + \frac{9}{x}$

Page 15 1 a (0, 0) and (4, 0)
 b horizontal point of inflexion at (0, 0),
 minimum at (3, -27) c (2, -16)
 d i ∞ ii ∞ e (see left)
Page 16 1 (see centre)
Page 17 1 a $x \neq 0$ b minimum at
 (3, 6), maximum at (-3, -6)
 d as $x \rightarrow 0^+$, $y \rightarrow \infty$, as $x \rightarrow 0^-$, $y \rightarrow -\infty$
 e as x gets large, $\frac{9}{x} \rightarrow 0$ f (see right)

