

13.

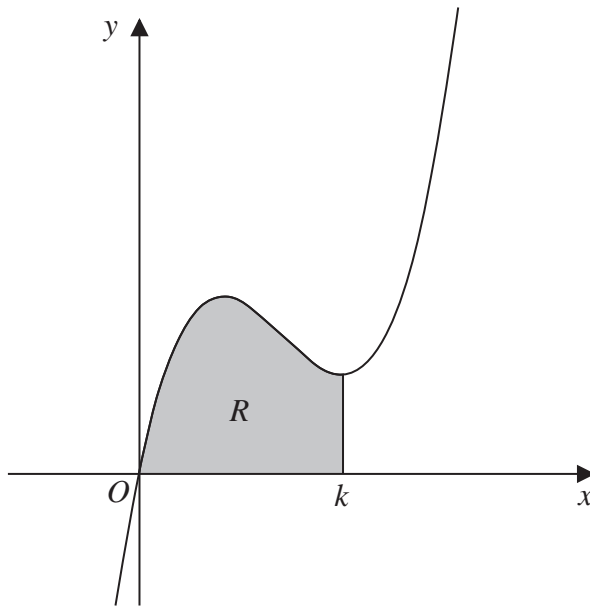
**Figure 3**

Figure 3 shows a sketch of part of the curve with equation

$$y = 2x^3 - 17x^2 + 40x$$

The curve has a minimum turning point at $x = k$.

The region R , shown shaded in Figure 3, is bounded by the curve, the x -axis and the line with equation $x = k$.

Show that the area of R is $\frac{256}{3}$

(Solutions based entirely on graphical or numerical methods are not acceptable.)