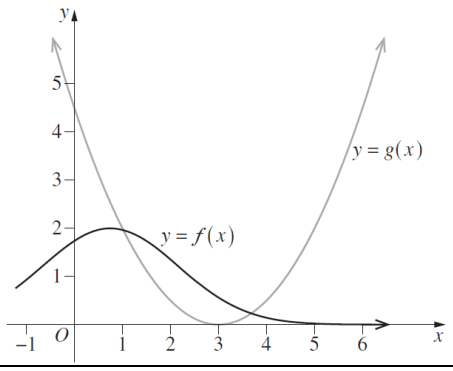
20 MA **10** The graph shows two functions $y = f(x)$ and $y = g(x)$. **1**



Define $h(x) = f(g(x))$.

How many stationary points does $y = h(x)$ have for $1 \leq x \leq 5$?

A. 0 B. 1

C. 2 D. 3

D

$y = h(x)$

$y = f(g(x))$

$y' = f'(g(x)).g'(x)$ (using chain rule)

For stationary points, $f'(g(x)).g'(x) = 0$:

$g'(x) = 0$. OR $f'(g(x)) = 0$.

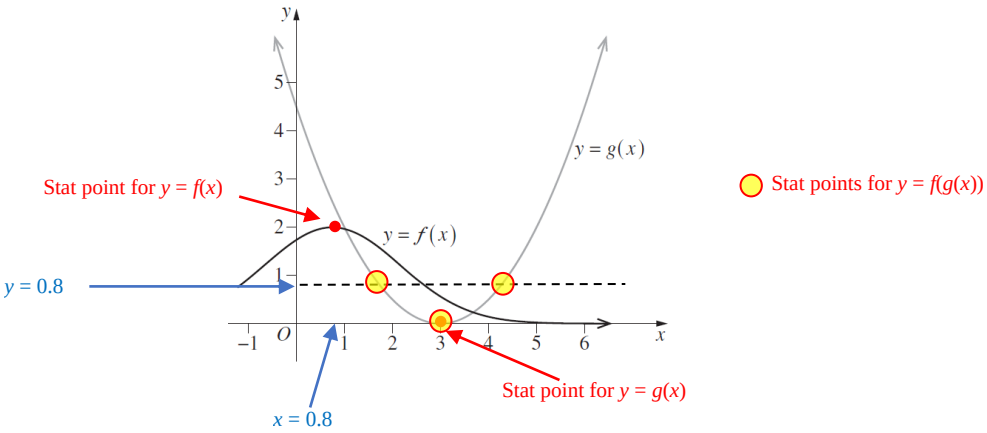
From the graph, $g'(3) = 0$. From the graph, $f'(0.8) = 0$.

$\therefore$ 1 stationary point (at $x = 3$). But $g(x) = 0.8$ when $x = 1.7$ and $x = 4.3$

$\therefore$ 2 stationary points (at $x = 1.7$ and 4.3).

Hence, there are 3 stationary points.

State Mean: **0.11/1**



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