**Core 3 Topic Assessment 5 – Transforming Graphs of Functions**

 **1.**



**Figure 1**

Figure 1 shows part of the graph of *y* = f (*x*), *x* ∈ ℝ.

The graph consists of two line segments that meet at the point *R* (4, – 3), as shown in Figure 1.

Sketch, on separate diagrams, the graphs of

(*a*) *y* = 2f(*x* + 4), **(3)**

(*b*) *y* = |f(−*x*)| **(3)**

On each diagram, show the coordinates of the point corresponding to *R*.

**2.**

The function f is defined by f : *x* → |2*x* − 5|, *x* ∈ ℝ.

(*a*) Sketch the graph with equation *y* = f(*x*), showing the coordinates of the points where the graph cuts or meets the axes. **(2)**

(*b*) Solve f(*x*) =15 + *x*. **(3)**

The function g is defined by g : *x* → *x*2– 4*x* + 1, *x* ∈ ℝ, 0 ≤ *x* ≤ 5.

(*c*) Find fg(2). **(2)**

(*d*) Find the range of g. **(3)**

 **3.**



**Figure 2**

Figure 2 shows a sketch of the graph of y = f (x).

The graph intersects the y-axis at the point (0, 1) and the point A(2, 3) is the maximum turning point.

Sketch, on separate axes, the graphs of

(i) y = f(–x) + 1, **(3)**

(ii) y = f(x + 2) + 3, **(3)**

(iii) y = 2f(2x) . **(3)**

On each sketch, show the coordinates of the point at which your graph intersects the y-axis and the coordinates of the point to which A is transformed.