Sample Paper 2014 (Set F): Paper 1

Question 5 (25 marks)

Question 5 (a)

$f(x) = 2^x$

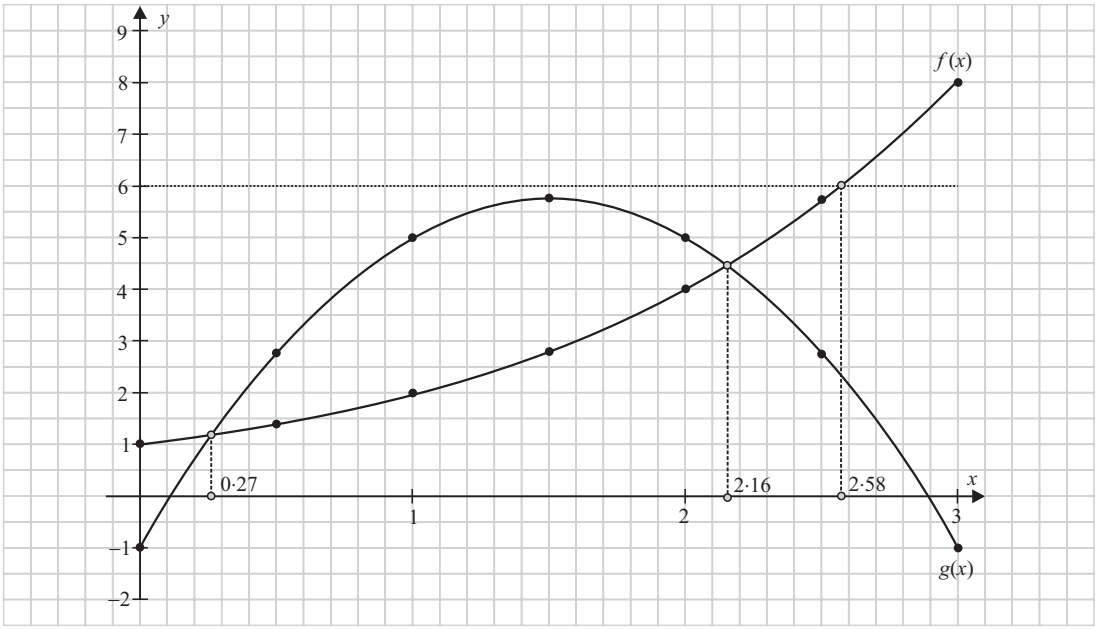
$g(x) = 9x - 3x^2 - 1$

Use your calculator to generate the values in the table correct to 2 decimal places.

Ex. $f(2\cdot5) = 2^{2\cdot5} = 5\cdot66$

$g(2\cdot5) = 9(2\cdot5) - 3(2\cdot5)^2 - 1 = 2\cdot75$

x	0	0.5	1	1·5	2	2·5	3
$f(x)$	1	1·41	2	2·83	4	5·66	8
$g(x)$	–1	2·75	5	5·75	5	2·75	–1



Question 5 (b)

$f(x) = g(x)$ ← Put $f(x) = g(x)$ to get the required equation.

$2^x = 9x - 3x^2 - 1$

$2^x + 3x^2 - 9x + 1 = 0$

$x = 0\cdot27,\ 2\cdot16$ ← $f(x) = g(x)$ is where the 2 graphs intersect. Read off these values from the graph.

Question 5 (c)

$2^k = 6$

$f(k) = 6$ ← Draw in the horizontal line $f(x) = 6$ and find out where it intersects the $f(x)$.

$k = 2\cdot58$