|  |  |  |  |
| --- | --- | --- | --- |
| Q4 | (a) | *f* and *g* are functions such that $f:x\rightarrow 2x+7 and g:x\rightarrow 3x-2$ |  |
|  | (i) | Find $f\left(-1\right), f\left(0\right), g\left(\frac{1}{3}\right), g\left(-4\right)$ |  |
|  | (ii) | The value of $x$ when $f\left(x\right)= -5$ |  |
|  | (iii) | The value of $x$ when $f^{-1}\left(x\right)=10$ |  |
|  | (iv) | For what value of $x$ is $f\left(x\right)= g(x)$ |  |
|  | (v) | Evaluate $fg\left(x\right)+gf\left(x\right)-1$ |  |
|  |  |  |  |
|  | (b) | Using the same axes and the same scales, graph the functions$$f:x\rightarrow x^{2}+x-3$$$$g:x\rightarrow 2x+1$$in the domain $-4\leq x \leq 3$ Use the graph to find, as accurately as you can |  |
|  |  |  |  |
|  | (i) | The roots of the equation $x^{2}+x-3=0$ |  |
|  | (ii) | The roots of the equation $x^{2}+x-1=0$ |  |
|  | (iii) | The minimum value of $f(x)$ |  |
|  | (iv) | The range of x values for which $f\left(x\right)<g(x)$ |  |
|  | (v) | The values of $x$ for which $f\left(x\right)=g(x)$ |  |
|  | (vi) | The values of $x$ for which $f\left(x\right)$ is increasing |  |