Target 7 Sheet 04B

BossMaths

Question 1

$$\mathrm{f}(x) = \frac{10}{x}, \ \mathrm{g}(x) = 3\,x^2$$

(a) Find $\mathrm{g}(1)$

(b) Find $\mathrm{fg}(-3)$

Question 2

Find the nth term of this quadratic sequence:
$20, \ 28, \ 40, \ 56, \ 76, \ldots$

Question 1

$$f(x) = \frac{10}{x}, \; g(x) = 3\,x^2$$

(a) Find $g(1)$

3

(b) Find $fg(-3)$

$\frac{10}{27}$

Question 2

Find the nth term of this quadratic sequence:
$20,\ 28,\ 40,\ 56,\ 76, \ldots$

The first differences are: 8, 12, 16, 20
The second differences are: 4, which means the sequence has nth term $2n^2 + bn + c$

So $2n^2 + bn + c$: $20,\ 28,\ 40,\ 56,\ 76, \ldots$
And $2n^2$: $2,\ 8,\ 18,\ 32,\ 50, \ldots$

i.e. $bn + c$: $18,\ 20,\ 22,\ 24,\ 26, ..$

so $b = 2$ and $c = 16$

So the nth term of the quadratic sequence is $2n^2 + 2n + 16$