

Part (f)(i)

Game plan: Expand both sides, cancel their common terms, and match what remains for every value of x .

Step 1: Compare $h(x+1)$ with $h(x) + 2$

$$\begin{aligned}ax^2 + 2ax + a + bx + b + c &= ax^2 + bx + c + 2 \\2ax + a + b &= 2.\end{aligned}$$

The right side does not change with x . For the left side also to stay fixed for *every* x , the coefficient $2a$ must be zero.

Step 2: Find a and b

$$2a = 0 \implies a = 0.$$

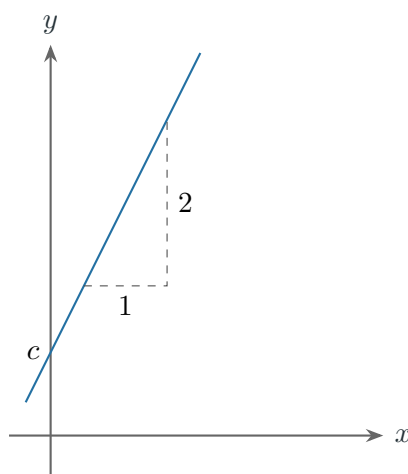
The remaining equation is $a + b = 2$. Therefore $b = 2$.

Final Answer

$a = 0, b = 2$.

Part (f)(ii)

Putting these values into $h(x) = ax^2 + bx + c$ gives $h(x) = 2x + c$. So the graph is a straight line with slope 2. The constant c can be any real number; it sets the intercept.



Moving 1 unit right raises the line by 2.

Final Answer

A straight line of slope 2, with any vertical intercept c .