Let for $a \neq a_1 \neq 0$, $f(x) = ax^2 + bx + c$, $g(x) = a_1x^2 + b_1x + c_1$ and $p(x)=f(x) - g(x)$.
If $p(x) = 0$ only for $x = -1$ and $p(-2) = 2$, then the value of $p(2)$ is: **[AIEEE-2011]**

(1) 18 (2) 3 (3) 9 (4) 6

$P(x) = k(x + 1)^2$

$P(-2) = 2 = k(-1)^2$

$\Rightarrow k = 2$

$\therefore\ P(x) = 2(x + 1)^2$

$\Rightarrow P(2) = 18$

Aliter :

$P(x) = (a - a_1)x^2 + (b - b_1)x + (c - c_1) = 0$

only $x = -1$ $\quad P(x) = 0$

So roots are equal.

it means $D = 0$

$(b - b_1)^2 = 4(a - a_1)(c - c_1) \Rightarrow q^2 = 4pr$

Let $a - a_1 = p$

$b - b_1 = q$

$c - c_1 = r$

$P(-1) = 0$

$p - q + r = 0$ ...... (1)

$4p - 2q + r = 2$ ..... (2)

$4p + 2q + r = ?$

From (1) $q = p + r$

$(p + r)^2 - 4pr = 0$

$(p - r)^2 = 0 \qquad \boxed{p = r}$

from eq. (1) $\quad q = 2r$

So from eq. (2) $\quad 4r - 4r + r = 2$

$r = 2$

So $4p + 2q + r = 4r + 4r + r = 9r = 18$