Exercise 2A

Question 13:

Let α, β be the zeros of required quadratic polynomial f(x)

We have,

$\alpha + \beta = -5$ and $\alpha\beta = 6$

$\therefore f(x) = x^2 - (\alpha+\beta)x + \alpha\beta$

$= x^2 - (-5)x + 6 = x^2 + 5x + 6$

So, the required polynomial is $x^2 + 5x + 6$

Now $f(x) = x^2 + 5x + 6 = x^2 + 3x + 2x + 6$

$= x(x+3) + 2(x+3)$

$= (x+3)(x+2)$

$f(x) = 0 \Rightarrow$ either $x + 3 = 0$ or $x + 2 = 0$

$\Rightarrow$ either $x = -3$ or $x = -2$

$\therefore$ Zeros of the polynomials are -3 and -2

Question 14:

Let α, β be the zeros of required quadratic polynomial f(x)

We have,

$\alpha + \beta = \frac{5}{2}, \alpha\beta = 1$

Now, $f(x) = x^2 - (\alpha+\beta)x + \alpha\beta$

$= x^2 - \frac{5}{2}x + 1 = \frac{1}{2}(2x^2 - 5 + 2)$

The polynomial whose zeros are α, β is $2x^2 - 5x + 2$

Further, $f(x) = \frac{1}{2}(2x^2 - 5x + 2) = \frac{1}{2}(2x^2 - 4x - x + 2)$

$= \frac{1}{2}[2x(x-2) - (x-2)]$

$= \frac{1}{2}(x-2)(2x-1)$

$f(x) = 0 \Rightarrow \frac{1}{2}(x-2)(2x-1) = 0$

$\therefore$ for that $x - 2 = 0$ or $2x - 1 = 0$

i.e., Either $x = 2$ or $x = \frac{1}{2}$

$\therefore$ Zeros of polynomial are 2 and $\frac{1}{2}$

********** END **********