Exercise 3.1

Choose the correct answer from the given four options:

Question 7:

If the lines given by 3x + 2ky = 2 and 2x + 5y + 1 = 0 are parallel, then the value of k is

(A) $\frac{-5}{4}$ (B) $\frac{2}{5}$ (C) $\frac{15}{4}$ (D) $\frac{3}{2}$

Answer 7:

(C) $\frac{15}{4}$

Solution:

The given equations are 3x + 2ky – 2 = 0 and 2x + 5y + 1 = 0.

Comparing with $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$, we have

$\frac{a_1}{a_2} = \frac{3}{2}$, $\frac{b_1}{b_2} = \frac{2k}{5}$ and $\frac{c_1}{c_2} = \frac{-2}{1}$

For parallel lines:

$$\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$$

$$\Rightarrow \frac{3}{2} = \frac{2k}{5} \neq \frac{-2}{1}$$

Solving first two ratios, we get

$$4k = 15$$

$$\Rightarrow \frac{15}{4}$$

Hence, the option (C) is correct.