

## Rational Numbers Ex 1.6 Q1

## Answer:

We have to verify that  $x \times y = y \times x$ .

(i) 
$$x = \frac{-1}{3}, y = \frac{2}{7}$$
  
 $x \times y = \frac{-1}{3} \times \frac{2}{7} = \frac{-2}{21}$   
 $y \times x = \frac{2}{7} \times \frac{-1}{3} = \frac{-2}{21}$   
 $\therefore \frac{-1}{3} \times \frac{2}{7} = \frac{2}{7} \times \frac{-1}{3}$ 

## Hence verified.

(ii) 
$$x = \frac{-3}{5}$$
,  $y = \frac{-11}{13}$   
 $x \times y = \frac{-3}{5} \times \frac{-11}{13} = \frac{33}{65}$   
 $y \times x = \frac{-11}{13} \times \frac{-3}{5} = \frac{33}{65}$   
 $\therefore \frac{-3}{5} \times \frac{-11}{13} = \frac{-11}{13} \times \frac{-3}{5}$ 

Hence verified.

(iii) 
$$x = 2$$
,  $y = \frac{7}{-8}$   
 $x \times y = 2 \times \frac{7}{-8} = \frac{7}{-4}$   
 $y \times x = \frac{7}{-8} \times 2 = \frac{7}{-4}$   
 $\therefore 2 \times \frac{7}{-8} = \frac{7}{-8} \times 2$   
Hence verified.  
(iv)  $x = 0$ ,  $y = \frac{-15}{8}$   
 $x \times y = 0 \times \frac{-15}{8} = 0$   
 $y \times x = \frac{-15}{8} \times 0 = 0$   
 $\therefore 0 \times \frac{-15}{8} = \frac{-15}{8} \times 0$ 

Hence verified.

Rational Numbers Ex 1.6 Q2

We have to verify that 
$$x \times (y \times z) = (x \times y) \times z$$
.

(i) 
$$x = \frac{-7}{3}$$
,  $y = \frac{12}{5}$ ,  $z = \frac{4}{9}$ 

$$\mathbf{x} \times \left(\mathbf{y} \times \mathbf{z}\right) = \frac{-7}{3} \times \left(\frac{12}{5} \times \frac{4}{9}\right) = \frac{-7}{3} \times \frac{16}{15} = \frac{-112}{45}$$

$$(x \times y) \times z = (\frac{-7}{3} \times \frac{12}{5}) \times \frac{4}{9} = \frac{-28}{5} \times \frac{4}{9} = \frac{-112}{45}$$

$$\therefore \frac{-7}{8} \times \left(\frac{15}{5} \times \frac{4}{9}\right) = \left(\frac{-7}{8} \times \frac{15}{5}\right) \times \frac{4}{9}$$

Hence verified.

(ii) 
$$x = 0$$
,  $y = \frac{-3}{5}$ ,  $z = \frac{-9}{4}$ 

$$x \times (y \times z) = 0 \times (\frac{-3}{5} \times \frac{-9}{4}) = 0 \times \frac{27}{20} = 0$$

$$\left(x \times y\right) \times z = \left(0 \times \frac{-3}{5}\right) \times \frac{-9}{4} = 0 \times \frac{-9}{4} = 0$$

$$\therefore 0 \times \left(\frac{-3}{5} \times \frac{-9}{4}\right) = \left(0 \times \frac{-3}{5}\right) \times \frac{-9}{4}$$

(iii) 
$$x = \frac{1}{2}$$
,  $y = \frac{5}{-4}$ ,  $z = \frac{-7}{4}$ 

$$x imes \left(y imes z
ight) = \ frac{1}{2} imes \left( frac{5}{-4} imes frac{-7}{4}
ight) = frac{1}{2} imes frac{35}{16} = frac{35}{32}$$

$$\left(x \times y\right) \times z = \left(\frac{1}{2} \times \frac{5}{-4}\right) \times \frac{-7}{4} = \frac{5}{-8} \times \frac{-7}{4} = \frac{35}{32}$$

$$\therefore \ \frac{1}{2} \times \left(\frac{5}{-4} \times \frac{-7}{4}\right) = \left(\frac{1}{2} \times \frac{5}{-4}\right) \times \frac{-7}{4}$$

Hence verified.

(iv) 
$$x = \frac{5}{7}$$
,  $y = \frac{-12}{13}$ ,  $z = \frac{-7}{18}$ 

$$x \times (y \times z) = \frac{5}{7} \times (\frac{-12}{13} \times \frac{-7}{18}) = \frac{5}{7} \times \frac{14}{39} = \frac{10}{39}$$

$$\left(x \times y\right) \times z = \frac{5}{7} \times \frac{-12}{13} \times \frac{-7}{18} = \frac{-60}{91} \times \frac{-7}{18} = \frac{10}{39}$$

$$\therefore \ \frac{5}{7} \times \left(\frac{-12}{13} \times \frac{-7}{18}\right) = \left(\frac{5}{7} \times \frac{-12}{13}\right) \times \frac{-7}{18}$$

Hence verified.

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