

Exercise 13B

Q15.

Answer:

(c) 16 hours

A tap can fill a cistern in 8 hours.

Part of cistern filled in one hour $=\frac{1}{8}$

A tap can empty the cistern in 16 hours.

Part of cistern emptied in one hour $=-\frac{1}{16}$ (negative sign shows that the cistern is being drained)

Q16.

Answer:

(d) 14 hours

A pump can fill a tank in 2 hours.

Part of the tank filled by the pump in one hour $=\frac{1}{2}$

Suppose the leak empties a full tank in x hours.

Part of the tank emptied by the leak in one hour $= -\frac{1}{x}$

Part of tank filled in one hour $=\frac{1}{2} - \frac{1}{x} = \frac{3}{7}$ (given)

$$\frac{1}{\mathbf{x}} = \frac{1}{2} - \frac{3}{7} = \frac{7 - 6}{14} = \frac{1}{14}$$

x = 14 hours

Q17.

Answer:

(b) 7 hours 30 minutes

Part of the tank filled by the first pipe in one hour $=\frac{1}{10}$ Part of the tank filled by the second pipe in one hour $=\frac{1}{12}$ Part of the tank filled by the third pipe in one hour $=\frac{-1}{20}$ Part of the tank filled by three pipes in one hour $=\frac{1}{10}+\frac{1}{12}-\frac{1}{20}=\frac{2}{15}$ Total time taken to fill the tank $=\frac{15}{2}\,\text{hrs}=7$ hours 30 minutes

******* FND *******