

$$1. -\frac{2}{3}\left(-\frac{5}{16} \div \frac{15}{64}\right) + \left(\frac{5}{8} \div \frac{3}{16}\right)$$

Sol<sup>n</sup>

$$\begin{aligned} &= -\frac{2}{3}\left(-\frac{5}{16} \times \frac{64}{15}\right) + \left(\frac{5}{8} \times \frac{16}{3}\right) \\ &= -\frac{2}{3}\left(-\frac{1}{1} \times \frac{4}{3}\right) + \left(\frac{5}{1} \times \frac{2}{3}\right) \\ &= \frac{8}{9} + \frac{10}{3} \\ &= \frac{8+30}{9} \\ &= \frac{38}{9} \end{aligned}$$

End.

$$2. \frac{7IR}{8} + \frac{IR}{2} - \frac{3IR}{16} + IR$$

Sol<sup>n</sup>

$$\begin{aligned} &= \left(\frac{7}{4} \times \frac{IR}{2}\right) + \left(\frac{IR}{2}\right) - \left(\frac{3}{8} \times \frac{IR}{2}\right) + \left(\frac{2}{2} \times IR\right) \\ &= \frac{7}{4}\left(\frac{IR}{2}\right) + \left(\frac{IR}{2}\right) - \frac{3}{8}\left(\frac{IR}{2}\right) + 2\left(\frac{IR}{2}\right) \\ &= \frac{IR}{2}\left(\frac{7}{4} + 1 + \frac{3}{8} + 2\right) \\ &= \frac{IR}{2}\left(\frac{14+8+3+16}{8}\right) \\ &= \frac{IR}{2}\left(\frac{41}{8}\right) \\ &= \frac{41IR}{16} \end{aligned}$$

End.

$$3. \left(\frac{2\pi fL}{10} \div \frac{2\pi fC}{5}\right) \times 2\pi fL$$

Sol<sup>n</sup>

$$\begin{aligned} &= \frac{2\pi fL}{10} \times \frac{5}{2\pi fC} \times 2\pi fL \\ &= \frac{4\pi^2 f^2 L^2}{2} \times \frac{1}{2\pi fC} \\ &= \frac{2\pi fL}{2} \times \frac{1}{C} \\ &= \pi fL \times \frac{1}{C} \\ &= \frac{\pi fL}{C} \end{aligned}$$

End.

$$4. \frac{\frac{3}{5}-3}{2-\frac{2}{5}} + \frac{1}{2}$$

Sol<sup>n</sup>

$$= \frac{9-45}{\frac{20-4}{10}} + \frac{1}{2}$$

$$= \frac{-36}{\frac{15}{16}} + \frac{1}{2}$$

$$= \left( \frac{-36}{15} \times \frac{10}{16} \right) + \frac{1}{2}$$

$$= \left( \frac{3}{1} \times \frac{2}{4} \right) + \frac{1}{2}$$

$$= \frac{6}{4} + \frac{1}{2}$$

$$= \frac{6+2}{4}$$

$$= \frac{8}{4}$$

$$= 2$$

End.

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$$5. \frac{\theta}{3} = \frac{\theta}{7} + 4$$

Sol<sup>n</sup>

$$\frac{\theta}{3} - \frac{\theta}{7} = 4$$

$$\theta \left( \frac{1}{3} - \frac{1}{7} \right) = 4$$

$$\theta \left( \frac{7-3}{21} \right) = 4$$

$$\theta = \frac{4}{\frac{4}{21}}$$

$$\theta = 4 \times \frac{21}{4}$$

$$\theta = 21$$

End.

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$$6. \frac{4P+3}{5} - \frac{P-5}{10} = \frac{P}{2}$$

Sol<sup>n</sup>

$$\frac{4P}{5} + \frac{3}{5} - \frac{P}{10} - \frac{5}{10} = \frac{P}{2}$$

$$\frac{4P}{5} - \frac{P}{10} + \frac{3}{5} - \frac{5}{10} = \frac{P}{2}$$

$$\frac{3}{5} - \frac{5}{10} = \frac{P}{2} - \frac{4P}{5} + \frac{P}{10}$$

$$\frac{6-5}{10} = P \left( \frac{1}{2} - \frac{4}{5} + \frac{1}{10} \right)$$

$$\frac{1}{10} = P \left( \frac{5-8+1}{10} \right)$$

$$\frac{1}{\frac{10}{-2}} = P$$

$$P = \frac{1}{10} \times \frac{10}{-2}$$

$$P = \frac{1}{1} \times \frac{1}{-2}$$

$$P = \frac{-1}{2} \quad \text{End.}$$

$$7. \frac{0.4I-0.6}{0.06I-0.07} = \frac{2I-3}{0.3I-0.4}$$

Sol<sup>n</sup>

$$0.4I-0.6 = \frac{2I-3}{0.3I-0.4} (0.06I-0.07)$$

$$0.4I-0.6(0.3I-0.4) = 2I-3(0.06I-0.07)$$

$$0.12I^2 - 0.16I - 0.18I + 0.24 = 0.12I^2 - 0.14I - 0.18I + 0.21$$

$$0.12I^2 - 0.34I + 0.24 = 0.12I^2 - 0.32I + 0.21$$

$$0.12I^2 - 0.34I - 0.12I^2 + 0.32I = 0.21 - 0.24$$

$$-0.34I + 0.32I = 0.21 - 0.24$$

$$-0.02I = -0.03$$

$$I = \frac{-0.03}{-0.02}$$

$$I = 1.5 \quad \text{End.}$$

$$8. \frac{1.3d - 1.5}{30} = \frac{0.4d + 0.3}{5}$$

Sol<sup>n</sup>

$$\frac{1.3d}{30} - \frac{0.4d}{5} = \frac{0.3}{5} + \frac{1.5}{30}$$

$$d\left(\frac{1.3}{30} - \frac{0.4}{5}\right) = \frac{9 + 7.5}{150}$$

$$d\left(\frac{6.5 - 12}{150}\right) = \frac{16.5}{150}$$

$$d = \frac{16.5}{150} \times \frac{150}{-5.5}$$

$$d = \frac{16.5}{1} \times \frac{1}{-5.5}$$

$$d = \frac{16.5}{-5.5}$$

$$d = 3 \quad \text{End.}$$


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$$9. \quad I = \frac{Vb - V}{R} \quad \text{หาค่า } Vb$$

Sol<sup>n</sup>

$$I \times R = Vb - V$$

$$(I \times R) - V = Vb$$

$$Vb = (I \times R) - V \quad \text{End.}$$


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$$10. \quad \beta = \frac{\alpha}{1 + \alpha} \quad \text{หาค่าของ } \alpha \text{ ในเทอมของ } \beta$$

Sol<sup>n</sup>

$$\beta(1 + \alpha) = \alpha$$

$$\beta + \beta\alpha = \alpha$$

หาร  $\alpha$  ทั้ง 2 ข้าง

$$\frac{\beta + \beta\alpha}{\alpha} = \frac{\alpha}{\alpha}$$

$$\frac{\beta}{\alpha} + \frac{\beta\alpha}{\alpha} = 1$$

$$\frac{\beta}{\alpha} + \beta = 1$$

$$\frac{\beta}{\alpha} = 1 - \beta$$

$$\alpha = \frac{1 - \beta}{\beta} \quad \text{End.}$$


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