

$$\frac{1}{x+6} + \frac{3}{x+4} = \frac{-2}{x^2+10x+24}$$

$$\frac{1}{x+6} + \frac{3}{x+4} = \frac{-2}{(x+4)(x+6)}$$

$$\frac{x+4+3(x+6)}{(x+6)(x+4)} = \frac{-2}{(x+4)(x+6)}$$

$$(x+4) + 3x + 18 = -2$$

$$4x + 22 = -2$$

$$4x = -24$$

$$\boxed{x = -6} \quad (\text{Ans})$$