

⑧
$$\begin{array}{c} P(x,y) \\ \text{---} \text{---} \text{---} \text{---} \\ A(-2,-2) \qquad B(2,-4) \end{array}$$

$$AP = \frac{3}{7} AB$$

$$\Rightarrow \frac{AP}{AB} = \frac{3}{7}$$

let $AP = 3x$, $AB = 7x$

$$\Rightarrow PB = AB - AP = 7x - 3x = 4x$$

$$\therefore \frac{AP}{PB} = \frac{3x}{4x}$$

$$\Rightarrow AP:PB = 3:4$$

$$x = \frac{3 \times 2 + 4(-2)}{3+4}, y = \frac{3(-4) + 4(-2)}{3+4}$$

$$= \frac{5-8}{7} = \frac{-3}{7}$$

$$= -\frac{4}{7} \qquad = -\frac{20}{7}$$

$$\therefore P\left(-\frac{4}{7}, -\frac{20}{7}\right)$$

⑨
$$\begin{array}{c} P(x,y) \quad C(x,y) \quad Q(x_2,y_2) \\ \text{---} \text{---} \text{---} \text{---} \\ A(-2,2) \qquad B(2,8) \end{array}$$

let points P, C and Q divide AB into 4 equal parts.

C is midpt of AB

$$x = \frac{-2+2}{2}, y = \frac{2+8}{2}$$

$$= \frac{0}{2} = 0 \qquad = \frac{10}{2} = 5$$

$$C(0,5)$$

P is midpoint of AC

$$\therefore x_1 = \frac{-2+0}{2}, y_1 = \frac{2+5}{2}$$

$$= -1 \qquad = \frac{7}{2}$$

$$P\left(-1, \frac{7}{2}\right)$$

Q is midpoint of CB

$$x_2 = \frac{0+2}{2}, y_2 = \frac{5+8}{2}$$

$$= 1 \qquad = \frac{13}{2}$$

$$Q\left(1, \frac{13}{2}\right)$$

coordinates of points are $\left(-1, \frac{7}{2}\right), (0,5), \left(1, \frac{13}{2}\right)$