

1.  $(0,0)$   $(3,4)$

$(3,4) \rightarrow (3,0)$

$x(t) = t$

$y(t) = \frac{4}{3}t$

$x(t) = 3$

$y(t) = -\frac{4}{3}t + 8$

$at+b=0$   $at+b=4$

$t=0$   $t=3$

$a(0)+b=0$   $3a+b=4$

$b=0$   $3a+0=4$

$3a=4$

$a = \frac{4}{3}$

Form:  $at+b$

$\frac{4}{3}t+0$

$at+b=4$

$at+b=0$

$t=3$

$t=6$

$3a+b=4$

$6a+b=0$

$6a+b=0$

$\underline{\underline{-3a}} \quad \underline{\underline{-b}} = \underline{\underline{-4}}$

$3a = -4$

$a = -\frac{4}{3}$

$6a+b=0$

$6(-\frac{4}{3})+b=0$

$-8+b=0$

$b=8$

Form:  $at+b$

$-\frac{4}{3}t+8$

$3 \leq t \leq 6$

①  $\vec{r}(t) = t\vec{i} + \frac{4}{3}t\vec{j}$   $0 \leq t \leq 3$

②  $\vec{r}(t) = 3\vec{i} + (8 - \frac{4}{3}t)\vec{j}$   
 $3 \leq t \leq 6$

$(3,0) \rightarrow (9,0)$   $6 \leq t \leq 9$

$x(t) = 9-t$

$y(t) = 0$

$at+b=3$

$at+b=0$

$t=6$

$t=9$

$6a+b=3$

$9a+b=0$

$9a+b=0$

$\underline{\underline{-6a}} \quad \underline{\underline{-b}} = \underline{\underline{-3}}$

$3a = -3$

$a = -1$

$9a+b=0$

$9(-1)+b=0$

$b=9$

Form:  $at+b$

$-1t+9$

Ans

$$\vec{r}(t) = \begin{cases} t\vec{i} + \frac{4}{3}t\vec{j} & 0 \leq t \leq 3 \\ 3\vec{i} + (8 - \frac{4}{3}t)\vec{j} & 3 \leq t \leq 6 \\ (9-t)\vec{i} & 6 \leq t \leq 9 \end{cases}$$

③

$\vec{r}(t) = (9-t)\vec{i} + 0\vec{j}$

$= (9-t)\vec{i}$   $6 \leq t \leq 9$