9

1. (10   )
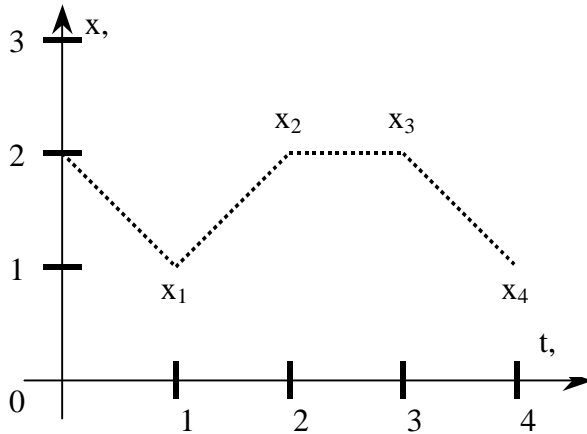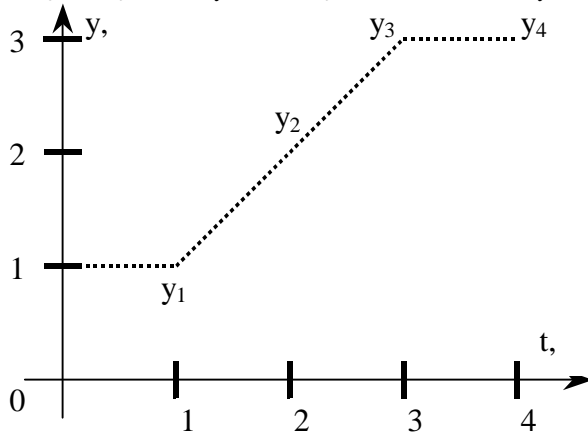
,   ( ),

$x(t)$ $y(t)$ $x = x_o + V_x t$

1) $x_1 = x_o + V_{x1}t$ $= 2$; $V_{x1} = -1$ / ; $_1 = 2$ $- 1$ / 1 $= 1$

2) $x_2 = x_1 + V_{x2}t$ $_1 = 1$; $V_{x2} = 1$ / ; $_2 = 1$ $+ 1$ / 1 $= 2$

3) $_3 = \,_2$ $V_{x3} = 0$ /

4) $_4 = \,_3 + V_{x4}t$; $_3 = 2$; $V_{x4} = -1$ / ; $_4 = 2$ $- 1$ / 1 $= 1$.
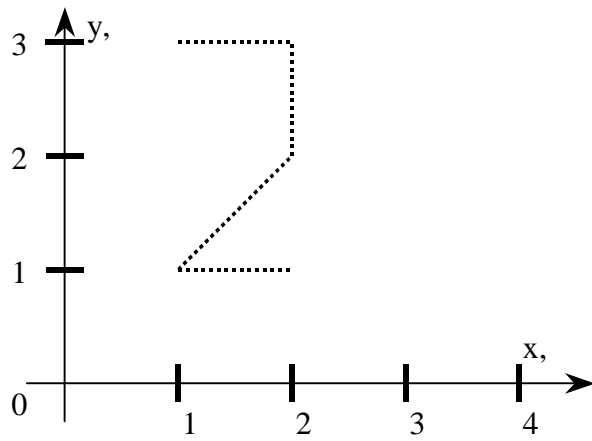

$y = y_o + V_y t$

1) $y_o = 1$; $_{vy1} = 0$ / ; $y_1 = y_o = 1$

2) $y_2 = y_1 + V_{y2}t$ $y_1 = 1$ $V_{y2} = 1$ / $y_2 = 3$

3) $y_3 = y_2 + V_{y3}t$ $y_2 = 3$ $V_{y3} = 0$ / $y_3 = 3$

; $_1$ $_1$; $_2$ $_2$;

$_3$ $_3$; $_4$ $_4$.

.

2. (5   )

$Q = A = P\ddagger$; $Q_1 = cm(t_2 - t_1)$; $Q_2 = Lm$,   c   L   .

                      , $\tau_2 = \ddagger_1 L / (t_2 - t_1)$; $\tau_2 \cong 1$.

3. (10   )

          ,   ,

        ,   **r.**

$$I = \frac{U}{R} = \frac{U}{R + \dfrac{Rr}{R + r}} = \frac{U(R + r)}{R(R + 2r)} \qquad (1)$$

                                                                    $U = IR + U_1$ (2).

          (1)   (2),

$$: \frac{U - U_1}{R} = \frac{U(R + r)}{R(R + 2r)} \qquad (3),$$

$$r = R \frac{U_1}{U - 2U_1} \qquad (4).$$

                                                    10

$(\mathbf{n = 10})$,   ,

          .

                              $\mathbf{r^1}$, $\mathbf{n}$,

$(r^1 = \dfrac{r}{10})$.   (3):

$$\frac{U - U_1^1}{R} = \frac{U(R + r^1)}{R(R + 2r^1)}, \qquad U_1^1 = U \frac{r^1}{R + 2r^1}. \qquad (5)$$

                  (4)   (5) U_1^1,

                  (,   ,   )   :

$$U_1^1 = \frac{UU_1}{nU - 2(n-1)U_1}. \qquad\qquad , \qquad\qquad U_1^1 = 47{,}61$$

4. (10   )

.

5. (10   )

,   .

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,   ,

(,   ).

,   , ,   ,   .

– 45.