

$$(6) \quad x = A \sin \omega t + B \cos \omega t \quad (\omega = \sqrt{\frac{k}{m}})$$

$$(7) \quad x = A \sin \omega t + B \cos \omega t \neq 0$$

$$v = \omega (A \cos \omega t - B \sin \omega t)$$

$$t = 0 \text{ } x = -a, v = 0 \text{ } \therefore$$

$$-a = A \cdot 0 + B \cdot 1 \quad \therefore B = -a$$

$$0 = \omega (A \cdot 1 - B \cdot 0) \quad \therefore A = 0$$

$$\therefore x = -a \cos \omega t = -a \cos \sqrt{\frac{k}{m}} t$$

$$(8) \quad t = 0 \text{ } x = 0, v = v_0 \text{ } \therefore$$

$$0 = A \cdot 0 + B \cdot 1 \quad \therefore B = 0$$

$$v_0 = \omega (A \cdot 1 - B \cdot 0) \quad \therefore A = \frac{v_0}{\omega}$$

$$\therefore x = \frac{v_0}{\omega} \sin \omega t$$

$$= v_0 \sqrt{\frac{m}{k}} \sin \sqrt{\frac{k}{m}} t$$