

解答

$$\left(-\frac{\hbar^2}{2m} \frac{d^2\varphi}{dx^2}\right) = E\varphi \quad (3)$$

$$B = 0 \quad (5)$$

$$A \sin\left(\frac{\sqrt{2mE}}{\hbar} a\right) = 0 \quad (6)$$

$n$ を整数として、

$$\frac{\sqrt{2mE}}{\hbar} a = n\pi \quad (7)$$

$$E = \frac{\hbar^2 \pi^2}{2ma^2} n^2 \quad (8)$$

$$\varphi = A \sin\left(\frac{n\pi}{a} x\right) \quad (9)$$

$$A = \sqrt{\frac{2}{a}} \quad (11)$$

$$\varphi = \sqrt{\frac{2}{a}} \sin\left(\frac{n\pi}{a} x\right) \quad (12)$$