

Ex 6040

[2010B2]

$$(1) V = -\frac{1}{2M} \int_0^a \partial\psi(0,y) \partial\psi(0,y) \epsilon(y) dy$$

$$\epsilon(y) = \frac{\epsilon_0}{a} \left(y - \frac{a}{2}\right)$$

$$\psi^{nm} = \frac{2}{a} \sin\left(\frac{\pi}{a}nx\right) \sin\left(\frac{\pi}{a}my\right)$$

$$S_1 \equiv 11 \quad \square$$

$$S_2 \equiv 21 \quad \square$$

$$A \equiv 12 \quad \square$$

(2)



$$\Delta = \frac{3\pi^2}{2Ma^2}$$

$$V_{S_n,A} = -\frac{1}{2M} \left(\frac{2}{a}\right)^2 \left(\frac{\pi}{a}n\right)\left(\frac{\pi}{a}\right) \frac{\epsilon_0}{a} \int_0^a \sin\left(\frac{\pi}{a}y\right) \sin\left(2\frac{\pi}{a}y\right) \left(y - \frac{a}{2}\right) dy$$

$$u \equiv \frac{\pi}{a} \left(y - \frac{a}{2}\right)$$

fix wie oben, p. 138

$$V_{S_n,A} = 12 \cdot \frac{16}{9} \frac{\epsilon_0}{Ma^3} \quad n=1,2$$

$$(3) \Delta E_0 = -\frac{|V_{S_1,A}|^2}{\Delta}$$

$$(4) \Delta E_{\pm} = \pm V_{S_2,A}$$