

$$6.8 \text{ a } \psi(x, t) = A e^{i(ax - bt)}$$

$$V = ?$$

This ψ is a 1-D wave where

$$\psi = e^{i(kx - \omega t)}$$

$$\text{so } \omega = b = \frac{E}{\hbar} = \frac{\hbar E - V}{\hbar}$$

$$E = \hbar \omega$$

$$\text{and } p = \hbar k = \hbar a$$

$$\hbar E = \frac{p^2}{2m}$$

$$b = \frac{\hbar^2 a^2}{2m} - V$$

$$V = \frac{\hbar^2 a^2}{2m} - b$$

b

$$p = \hbar k = \hbar a$$

$$a = \frac{p}{\hbar}$$

c

$$E = \hbar E + V = \frac{\hbar^2 a^2}{2m} + \frac{\hbar^2 a^2}{2m} - b$$

$$E = \frac{\hbar^2 a^2}{m} - b$$