Solution

$$-\frac{\hbar^2}{2m}\frac{d^2\psi(x)}{dx^2}+U(x)\psi(x)=E\psi(x)$$

Notice that if U(x) = constant, this equation has the simple form:

$$\frac{d^2\psi}{dx^2}=C\psi(x)$$

where $C = \frac{2m}{\hbar^2}(U-E)$ is a constant that might be positive or negative.

For positive C (*i.e.*, U > E), what is the form of the solution?

a) sin kx b) cos kx c) e^{ax} d) e^{-ax}

For negative C (U < E) what is the form of the solution?

a) sin kx b) cos kx c) e^{ax} d) e^{-ax}

Most of the wave functions in P214 will be sinusoidal or exponential.