Solutions to the time-independent SEQ

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

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

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

where $C=\dfrac{2m}{\hbar^2}(U-E)$ 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.