Babatunde J FALAYE* (babatunde.falaye@fulafia.edu.ng), ESFM, Instituto Politécnico Nacional, UPALM, México D. F. 07738, México, México D. F., Mexico. Formula Method for Bound State Problems.

We present a simple formula for finding bound state solution of any quantum wave equation which can be simplified to the form of $\Psi''(s) + \frac{(k_1-k_2)s}{s(1-k_3s)} \Psi'(s) + \frac{(As^2+Bs+C)}{s^2(1-k_3s)^2} \Psi(s) = 0$. The two cases where $k_3 = 0$ and $k_3 \neq 0$ are studied. We derive an expression for the energy spectrum and the wave function in terms of generalized hypergeometric functions $2F_1(\alpha, \beta; \gamma; k_3s)$. In order to show the accuracy of this proposed formula, we resort to obtaining bound state solutions for some existing eigenvalue problems in a rather more simplified way. This method has shown to be accurate, efficient, reliable and very easy to use particularly when applied to a vast number of quantum potential models. (Received September 15, 2015)