Anharmonic Oscillator and Spectral Methods [easy]

Using the very precise discrete derivative matrix

```
NDSolve`FiniteDifferenceDerivative[1,x,DifferenceOrder-> nPoints- 1]["Differ-
entiationMatrix"]
```

introduced in Wilke's lecture, construct a very good matrix approximation to Schrodinger equation and obtain in this way the energies of anharmonic oscillator with as many digits as obtained in Pedro's lecture using Rayleigh-Ritz method. Check that the Chebyshev grid of points `x` introduced by Wilke is indeed way better than other naive grid such as a uniform grid for which you should only be able to get a few digits.

Hint: For `x` you can use points a slightly rescaled grid $x = -6\cos\left(\frac{r\pi}{n-1}\right)$ with $r = 0, \ldots, n-1$. For $x > 6$ the wave function is way too suppressed so this is plenty as you can also check.