```
Timing[Clear[e];
 V[x_] := 1 / 2 * w ^ 2 * x ^ 2;
 n = 500;
 h = 0.2; offset = n * h / 2;
 w = 1;
 e = Table[0, {j, n}, {k, n}];

 i = n;

 e[[i, i]] = -2 (1 + V[i * h - offset]);
 e[[i, i - 1]] = 1;

 i = 1;
 e[[i, i]] = -2 (1 + V[i * h - offset]);
 e[[i, i + 1]] = 1;

 While[i < n - 1, i++;
  e[[i, i]] = -2 (1 + V[i * h - offset]);
  e[[i, i + 1]] = 1;
  e[[i, i - 1]] = 1;
 ];


 Sort[-Eigenvalues[e] / 2 / h ^ 2][[1 ;; 10]] // N]
{0.49,
 {2.46834, 7.33999, 12.0787, 16.6782, 21.1312, 25.4291, 29.561, 33.5136, 37.2688, 40.8054}}
```