Quantum Mechanics

Table of Hermite Polynomials

They can be generated with Rodrigues formula:

$$H_n(x) = (-1)^n e^{x^2} \left(\frac{d}{dx}\right)^n e^{-x^2}$$

Alternatively, once you know $H_0(x) = 1$ and $H_1(x) = 2x$ you can apply the recursion:

$$H_n(x) = 2xH_{n-1}(x) + 2(n-1)H_{n-2}(x)$$

Here are some of them:

$$H_0 = 1$$
$$H_1 = 2u$$
$$H_2 = 4u^2 - 2$$
$$H_3 = 8u^3 - 12u$$
$$H_4 = 16u^4 - 48u^2 + 12$$
$$H_5 = 32u^5 - 160u^3 + 120u$$
$$H_6 = 64u^6 - 480u^4 + 720u^2 - 120$$
$$H_7 = 128u^7 - 1344u^5 + 3360u^3 - 1680u$$
$$H_8 = 256u^8 - 3584u^6 + 13440u^4 - 13440u^2 + 1680$$
$$H_9 = 512u^9 - 9216u^7 + 48384u^5 - 80640u^3 + 30240u$$
$$H_{10} = 1024u^{10} - 23040u^8 + 161280u^6 - 403200u^4 + 302400u^2 - 30240$$
$$H_{11} = 2048u^{11} - 56320u^9 + 506880u^7 - 1774080u^5 + 2217600u^3 - 665280u$$