

where

$$c_1 = (q_1, f) = \int_{-1}^1 \frac{1}{\sqrt{2}} f(t) dt$$

$$c_2 = (q_2, f) = \int_{-1}^1 \sqrt{\frac{3}{2}} t f(t) dt$$

$$c_3 = (q_3, f) = \int_{-1}^1 \frac{\sqrt{5}}{2\sqrt{2}} (3t^2 - 1) f(t) dt$$