

$$q(t) = \left(\frac{\operatorname{sn}(t)}{1 + \operatorname{cn}^2(t)}, \frac{\operatorname{sn}(t)\operatorname{cn}(t)}{1 + \operatorname{cn}^2(t)} \right) = (x(t), y(t))$$

$$\Rightarrow q^{\pm}(t) = x \pm iy = \frac{\operatorname{sn}(t)}{1 \mp i\operatorname{cn}(t)}$$