Exercise 11.1 (Normal transformation)

a)

$$n' \cdot t' = (n')^T t \overset{!}{=} n^T t = n \cdot t$$
$$n^T G^T M t \overset{!}{=} n^T t$$
$$\Rightarrow G^T M = \mathbb{1}$$
$$G^T = M^{-1}$$
$$\Rightarrow \quad G = \left(M^{-1}\right)^T$$