(c) $W \in \mathbb{R}^{d_2 \times d_1}$ $x \in \mathbb{R}^{d_1}$ $Wx = y$ ($d_2 \times 1$)

$w \in \mathbb{R}^{1 \times d_1}$ $\mathbb{E}(y) = \mathbb{E}(wx) = \mathbb{E}(w)\mathbb{E}(x) = 0.$

$Var(y) = \mathbb{E}(y^2) - \mathbb{E}^2(y) = \mathbb{E}(w^2 x^2)$

$$\frac{1}{\sqrt{\frac{1}{d_1}\sum_i x_i^2}} \, wx$$

$$Var = Var\left(\frac{d_1}{\sum_i x_i^2}\left(\sum_j^{d_2} w_i x\right)^2\right) = \frac{d_1^2}{\left(\sum_i^{d_1} x_i\right)^2}$$

$$= d_1^2 \left(\frac{\left(\sum_i^{d_2} w_i x\right)^2}{\left(\sum_i^{d_1} x_i\right)^2}\right) = \frac{d_1^2}{d_1} = d_1 ..$$