Since D is diagonal with descending singular values then $||Dy||$ is minimized for $\underline{y = [0, .., 1]^T}$

$$\boxed{\text{Then } \underline{x = Vy} \text{ is the last column of matrix } V.}$$

<u>Alternate proof based on eigenvalue</u>

$$\boxed{\text{The solution to } ||Ax||^2 = [Ax]^T Ax = x^T A^T Ax \text{ s.t } \cancel{\#}\ x^T x = 1 \text{ is the eigenvector corresponding to the least eigenvalue of } A^T A}$$

From Lagrange Multiplier

$$L(x) = x^T A^T A x - \lambda(x^T x - 1)$$

Take der wrt x and set it to zero give

$$A^T A x - \lambda x = 0.$$

Or λ is an eigenvalue of $A^T A$ and $x = e_\lambda$ is the eigenvector corresponding to $A^T A$.

then

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1) Why is

2) What a

problem

3). Given

~~4). Proble~~

4) Ass1. t

5). What

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6) What

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7). Show