

## Week 7a

Tuesday, October 20, 2020 10:15 AM

18.2)

$$A = \begin{bmatrix} 2 & 1 \\ 1 & 2 \end{bmatrix}$$

$$\det(A - \lambda I) = 0$$

$$(2 - \lambda)(2 - \lambda) + 1 = 0$$

$$4 - 4\lambda + \lambda^2 + 1 = 0$$

$$\lambda^2 - 4\lambda + 5 = 0$$

Come back

$$18.3.3) A = \begin{bmatrix} 2 & 1 \\ 1 & 2 \end{bmatrix} \quad v_1 = \begin{bmatrix} \frac{1}{\sqrt{2}} \\ \frac{1}{\sqrt{2}} \end{bmatrix}$$

$$w = \begin{bmatrix} 2 \\ 1 \end{bmatrix} \quad v_2 = \begin{bmatrix} \frac{1}{\sqrt{2}} \\ -\frac{1}{\sqrt{2}} \end{bmatrix}$$

$$\begin{bmatrix} v_1 & v_2 \\ \vdots & \vdots \end{bmatrix} x = \begin{bmatrix} 2 \\ 1 \end{bmatrix}$$

$$w = 2.1213v_1 + 0.7071v_2$$

18.4.1)

$$A^2 = UDU^{-1}$$

$$AU_i = \lambda U_i$$

$$A^2 V = ??? \text{ How?}$$

↓

$$\begin{aligned}
 AA &= (VDV^{-1})(VDV^{-1}) \\
 &= (VD)(\cancel{V^{-1}V})(DV^{-1}) \\
 &= VD^2V^{-1}
 \end{aligned}$$