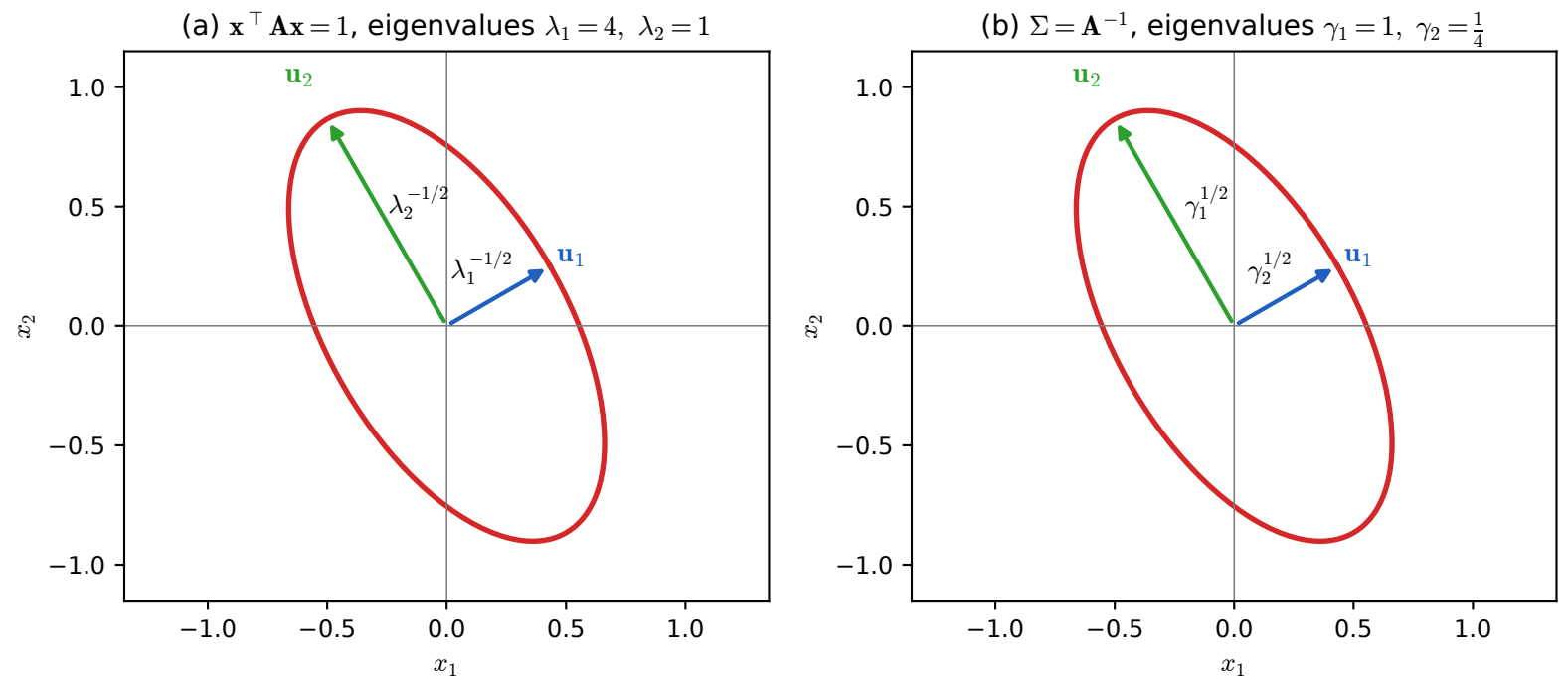

(a) $\mathbf{x}^\top \mathbf{A}\mathbf{x} = 1$, eigenvalues $\lambda_1 = 4,\ \lambda_2 = 1$
$\mathbf{u}_2$
$\lambda_2^{-1/2}$
$\lambda_1^{-1/2}$
$\mathbf{u}_1$
1.0
0.5
0.0
−0.5
−1.0
x_2
−1.0
−0.5
0.0
0.5
1.0
x_1
(b) $\Sigma = \mathbf{A}^{-1}$, eigenvalues $\gamma_1 = 1,\ \gamma_2 = \frac{1}{4}$
$\mathbf{u}_2$
$\gamma_1^{1/2}$
$\gamma_2^{1/2}$
$\mathbf{u}_1$
1.0
0.5
0.0
−0.5
−1.0
x_2
−1.0
−0.5
0.0
0.5
1.0
x_1