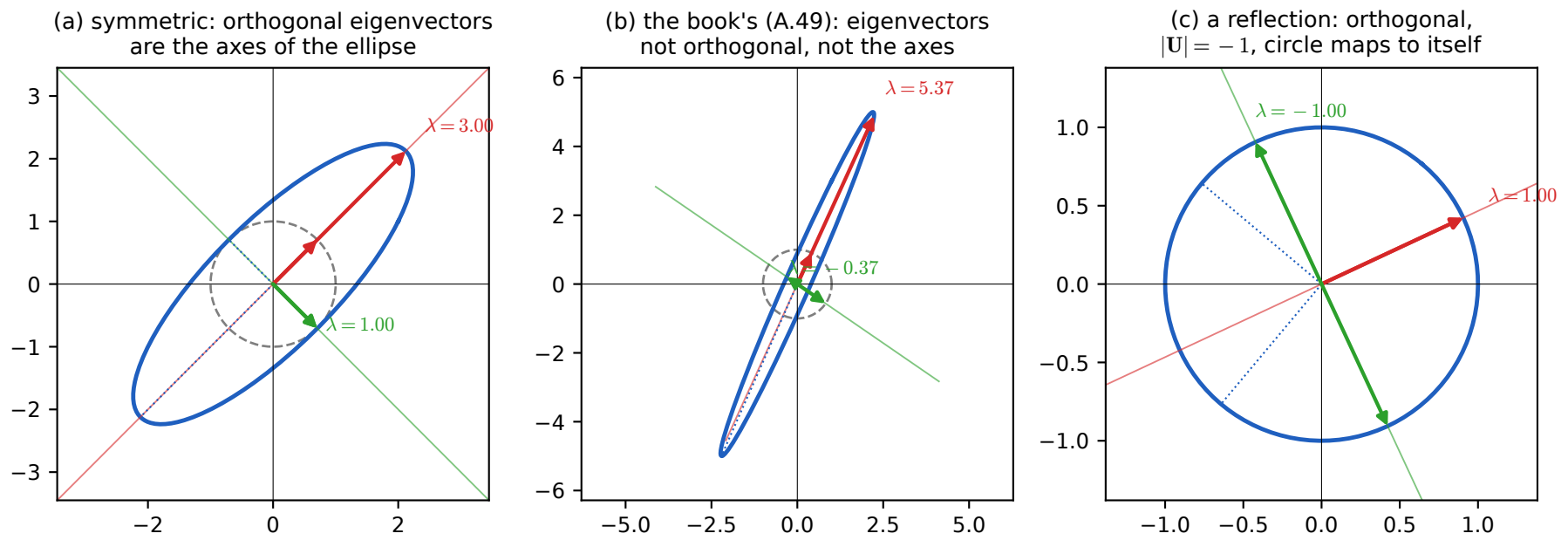

(a) symmetric: orthogonal eigenvectors are the axes of the ellipse
$\lambda = 3.00$
$\lambda = 1.00$
(b) the book's (A.49): eigenvectors not orthogonal, not the axes
$\lambda = 5.37$
$\lambda = 0.37$
(c) a reflection: orthogonal, $|\mathbf{U}| = -1$, circle maps to itself
$\lambda = -1.00$
$\lambda = 1.00$