

2 Hyperbolic functions and eigenvalues – Part 1 — Answers

Answers

Work through these after trying the questions yourself.

2.1 $\cosh x = \frac{e^x + e^{-x}}{2}.$

2.2 $\cosh^2 x - \sinh^2 x = 1.$

2.3 $\frac{e^0 + e^0}{2} = \frac{1 + 1}{2} = 1.$

2.4 A only stretches it ($A\mathbf{v} = \lambda\mathbf{v}$): its direction is unchanged.

2.5 $\det(A - \lambda I) = 0.$

2.6 $\det(A - \lambda I) = (4 - \lambda)(2 - \lambda) - 0 = 0$, so $\lambda = 4$ or $\lambda = 2$.