

Math 220 Assignment

October 12, 2001

Due Monday, October 15

1. For a given real number θ find a 2×2 matrix R_θ for which the linear function ρ defined by $\rho(x) = R_\theta x$ is the counterclockwise rotation of the plane through the angle of (radian) measure θ . *Hint:* First work out the four special cases where θ takes the values 0 , $\pi/2$, π , and $3\pi/2$.
2. Find a 3×3 matrix S for which the linear function σ given by $\sigma(x) = Sx$ is the reflection of \mathbf{R}^3 in the xz plane (where the 2nd coordinate $y = 0$).
3. *Possibly very difficult at this stage:* Find a 3×3 matrix T for which the linear function σ given by $\sigma(x) = Tx$ is the reflection of \mathbf{R}^3 in the plane $2x - 2y + z = 0$.

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<http://math.albany.edu:8000/math/pers/hammond/course/mat220/assgt/1a011012.html>