

Linear. Quiz 8. Name _____ Time _____

(1) Find the eigenvalues and eigenspaces for: $T : \mathcal{P}_3 \rightarrow \mathcal{P}_3$ where $T(f) = x^2(f'')$ (multiplying by x^2 after taking the second derivative.) Start by finding a matrix representation. Eigenspaces should be spans of polynomials.

(2) Find the eigenvalues and eigenspaces for: $T : \mathcal{P}_3 \rightarrow \mathcal{P}_3$ where $T(f) = ((x+1)f)'$ (multiplying by $x+1$ and then taking the derivative.) Eigenspaces should be spans of polynomials.