

Math 3280 Worksheet 20: Linear dependence of vectors

Group members (2 to 4): _____

- (1) (a) Are the vectors $v_1 = \begin{pmatrix} 1 \\ -1 \\ 0 \\ 2 \end{pmatrix}$, $v_2 = \begin{pmatrix} 2 \\ 0 \\ -2 \\ 1 \end{pmatrix}$, and $v_3 = \begin{pmatrix} 0 \\ 1 \\ -1 \\ -\frac{3}{2} \end{pmatrix}$ linearly independent or dependent?
- (b) If they are linearly dependent, find constants c_1, c_2, c_3 , not all zero, such that $c_1v_1 + c_2v_2 + c_3v_3 = 0$.

- (2) Let $W = \text{span}(\{v_1, v_2, v_3\})$. Find a basis for W , and determine its dimension.