

$$, \text{ stack: } \begin{bmatrix} -847 & -143 & 390 & 24 \\ -705 & -109 & -510 & -624 \\ -546 & -990 & -980 & 738 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \end{bmatrix}$$

1.2 Transposition

The transpose of an $m \times n$ matrix $(a_{i,j})$ is the $n \times m$ matrix $(a_{j,i})$.

Example 4 *The transpose of*

$$\begin{bmatrix} 610 & -355 \\ -837 & 316 \\ -869 & -733 \end{bmatrix}$$

is the matrix

$$\begin{bmatrix} 610 & -837 & -869 \\ -355 & 316 & -733 \end{bmatrix}$$

Note that we could write

$$\begin{bmatrix} 610 & -355 \\ -837 & 316 \\ -869 & -733 \end{bmatrix}^T = \begin{bmatrix} 610 & -837 & -869 \\ -355 & 316 & -733 \end{bmatrix}$$

As the last example illustrates the transpose of a matrix A is denoted by A^T . Consequently, we could define

$$A = \begin{bmatrix} 610 & -837 & -869 \\ -355 & 316 & -733 \end{bmatrix}$$

so that A^T

Exercise 5 *Compute the transpose of*

- $$\begin{bmatrix} 74 & -246 & -669 & 549 \\ 808 & -297 & -514 & -555 \\ -688 & -433 & 874 & -877 \end{bmatrix}$$

- $$\begin{bmatrix} 808 & -297 & -514 & -555 \end{bmatrix}$$

- $$\begin{bmatrix} -669 \\ -514 \\ 874 \end{bmatrix}$$

1.3 Trace of a matrix

Exercise 6 Read the information in the *SWP Help* file on the **trace** of a matrix, generate a random 3×3 matrix, and compute its trace.

2 Project 13

Instructions: Create a file containing the answers to the exercises in this lesson. You do not need to include the definitions and examples. Submit a .tex version of your file to teprice@uakron.edu. The name of your files should be of the form **yourlastname12.tex**. All calculations should be done using the CAS in SWP.