

QUANTITATIVE GENETICS

Title A QUICK REVIEW OF MATRIX ALGEBRA

Purpose:

Provide students a quick review of matrix algebra.

Goal:

Prepare students to apply matrix algebra in selection indices

Reference:

QG\_Mod11\_review\_matrix\_algebra\_for\_ALA11.3.docx

ALA: How to perform matrix operations.

$$\text{Given } A = \begin{pmatrix} 3 & 6 \\ 2 & 1 \end{pmatrix}, B = \begin{pmatrix} 1 & 0 & 3 & 2 \\ 0 & -1 & -1 & 1 \end{pmatrix}, X = \begin{pmatrix} 1 \\ 1 \\ 0 \\ 1 \end{pmatrix}, Y = \begin{pmatrix} 1 \\ -1 \end{pmatrix},$$

Use hand calculations to determine:

- a.  $AB$
- b.  $A'B$
- c.  $XY$
- d.  $XY'$

Use Excel to determine

- e.  $(A+A')B$
- f.  $AB+A'B$
- g.  $BB'$
- h.  $B'B$
- i. trace of  $B'B$
- j.  $BX$
- k.  $B'BX$
- l.  $X'B'BX$
- m.  $AY$
- n.  $A'AY$
- o.  $A^{-1}$
- p.  $(B'B)^{-1}$