

# Math Sheet

Name \_\_\_\_\_ Score \_\_\_\_\_ Teacher \_\_\_\_\_ Date \_\_\_\_\_

## 2 by 2 Eigenvalues and Eigenvectors

Find the characteristic polynomial, exact eigenvalues, and a legitimate eigenvector basis for every eigenspace.

1. For  $A = \begin{bmatrix} -1 & 0 \\ 0 & -1 \end{bmatrix}$ , find  $p(\lambda)$ , the exact eigenvalues, and a basis for each eigenspace.

---

---

---

---

---

---

---

---

2. For  $A = \begin{bmatrix} -3 & 0 \\ 12 & 3 \end{bmatrix}$ , find  $p(\lambda)$ , the exact eigenvalues, and a basis for each eigenspace.

---

---

---

---

---

---

---

---

2 by 2 Eigenvalues and Eigenvectors

Find the characteristic polynomial, exact eigenvalues, and a legitimate eigenvector basis for every eigenspace.

3. For  $A = \begin{bmatrix} 2 & 8 \\ 0 & -2 \end{bmatrix}$ , find  $p(\lambda)$ , the exact eigenvalues, and a basis for each eigenspace.

4. For  $A = \begin{bmatrix} 3 & -2 \\ 4 & -3 \end{bmatrix}$ , find  $p(\lambda)$ , the exact eigenvalues, and a basis for each eigenspace.

2 by 2 Eigenvalues and Eigenvectors

Find the characteristic polynomial, exact eigenvalues, and a legitimate eigenvector basis for every eigenspace.

5. For  $A = \begin{bmatrix} -6 & 4 \\ -1 & -2 \end{bmatrix}$ , find  $p(\lambda)$ , the exact eigenvalues, and a basis for each eigenspace.

6. For  $A = \begin{bmatrix} 5 & 5 \\ 0 & 0 \end{bmatrix}$ , find  $p(\lambda)$ , the exact eigenvalues, and a basis for each eigenspace.