Matlab Project: Methods for Eigenvalues **Name:** Lewis Collum

ANSWER SHEET **Name:**

Step 1: The MATLAB command `eig`

Eigenvalues and eigenvectors of A (report to four decimal places):

$\lambda_1 = 3$ $\lambda_2 = 10$ $\lambda_3 = 5$

$$\mathbf{v}_1 = \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix} \quad \mathbf{v}_2 = \begin{bmatrix} -0.4083 \\ 0.8165 \\ 0.4083 \end{bmatrix} \quad \mathbf{v}_3 = \begin{bmatrix} 0.5345 \\ 0.2673 \\ 0.8018 \end{bmatrix}$$

Eigenvalues of B (report to four decimal places):

$\lambda_1 =$ 0 $\lambda_2 =$ -8.7205 $\lambda_3 =$ -0.8460

$\lambda_4 =$ -0.3235 + 0.9755i $\lambda_5 =$ -0.3235-0.9755i $\lambda_6 =$ 0.6067+0.6340i

$\lambda_7 =$ 0.6067-0.6340i Student number you used for B: 0621539

Step 2: The QR Method

Final version of the matrix A (to four decimal places in each entry):

$A =$

```
10.00000    1.73210    2.82840
-0.00000    5.00000   -2.44950
 0.00000    0.00000    3.00000
```

Step 3: The Power Method

Final estimate of the eigenvalue of C having largest magnitude (to four decimal places):

$\lambda_m =$ 157.00 .

Corresponding eigenvector (to four decimal places):

$\mathbf{x} =$

```
0.00000
0.48040
0.16010
0.08010
0.40030
0.24020
0.72060
```

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MATLAB input and output:

Staple a printed copy of your input and output (see instructions) to this answer sheet.