MATA33H3S **Last Name:** _____
Calculus for Management II **First Name:** _____
Winter 2020 Quiz 2 **Student Number:** _____
Mark: _____/30

1. (12 points) Let $A = \begin{bmatrix} 4 & 3 \\ 2 & 5 \end{bmatrix}$, $B = \begin{bmatrix} 3 & -27 \\ -18 & 33 \end{bmatrix}$

   (a) Find $(A^2 - 3I)^T$

   (b) Find all 2×2 diagonal matrices D s.t. $D^2 - A^2 = B$

2. (6 points) Consider the following the system of equations:

$$x + 2y - z = 2$$

$$-3x + y = 2$$

$$4x + y - 3z = 3$$

   Solve this system using matrix reduction.

3. (12 points) Determine the value(s) of real numbers a and b so that the system of equations:

$$x - y + 2z = 4$$

$$3x - 2y + 9z = 14$$

$$2x - 4y + az = b$$

has (i) no solution; (ii) a unique solution; (iii) infinitely many solutions.