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## MA 26500-215    Quiz 10

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1. Let  $T: \mathbb{R}^3 \rightarrow \mathbb{R}^3$  be a linear map that sends

$$T(1, 0, 0) = (3, 2, 4)$$

$$T(0, 1, 0) = (2, 0, 2)$$

$$T(0, 0, 1) = (4, 2, 3).$$

- (a) (4 points) Find the value of  $T(2, 1, -1)$ .

- (b) (6 points) Find the matrix representation of  $T$  with respect to the standard basis on  $\mathbb{R}^3$ .

- (c) (10 points) Using the matrix representation of  $T$ , find the characteristic polynomial.  
**You do not have to simplify it.**