

Please PRINT your name _____

No calculators, cell phones, computers, notes, etc.

Circle your answer. Make your work correct, complete and coherent.

Please take a picture of your quiz (for your records) just before you turn the quiz in. I will e-mail your grade and my comments to you. I will keep your quiz.

The quiz is worth 5 points. The solutions will be posted on my website later today.

Quiz 2, January 26, 2022

Find scalars a_1 and a_2 so that $a_1r + a_2s = t$, where

$$r = \begin{bmatrix} 1 \\ 0 \end{bmatrix}, \quad s = \begin{bmatrix} 2 \\ 3 \end{bmatrix}, \quad \text{and} \quad t = \begin{bmatrix} 1 \\ 4 \end{bmatrix}.$$

Solution: Find numbers a_1 and a_2 so that

$$a_1 \begin{bmatrix} 1 \\ 0 \end{bmatrix} + a_2 \begin{bmatrix} 2 \\ 3 \end{bmatrix} = \begin{bmatrix} 1 \\ 4 \end{bmatrix}.$$

That is, solve the system of equations

$$\begin{aligned} a_1 + 2a_2 &= 1 \\ 3a_2 &= 4 \end{aligned}$$

Divide equation 2 by 3:

$$\begin{aligned} a_1 + 2a_2 &= 1 \\ a_2 &= \frac{4}{3} \end{aligned}$$

Replace equation 1 minus 2 times equation 2:

$$\boxed{\begin{aligned} a_1 &= \frac{-5}{3} \\ a_2 &= \frac{4}{3} \end{aligned}}$$

Of course, this works:

$$\frac{-5}{3} \begin{bmatrix} 1 \\ 0 \end{bmatrix} + \frac{4}{3} \begin{bmatrix} 2 \\ 3 \end{bmatrix} = \begin{bmatrix} 1 \\ 4 \end{bmatrix} \checkmark.$$