QUIZ 5 Math 304-06 Print your name _____
Oct. 6, 2023

No consultation!—that includes no electronics.

(1) (2 points each) Circle your answer to each question. You do not have to give a reason for your answer.

(a) True False $\mathbb{P}_3$ has a basis that has three elements.

(b) True False The dimension of $\mathbb{P}_3$ is 3.

(c) True False A basis for $\mathbb{R}^2$ is $\mathbf{e}_1, \mathbf{e}_2$.

(d) True False A basis for $\mathbb{R}^2$ is $\{\mathbf{e}_1, \mathbf{e}_2\}$.

(e) True False A basis for $\mathbb{P}_2$ is $\mathbf{e}_1, \mathbf{e}_2, \mathbf{e}_3$.

(f) True False A basis for $\mathbb{P}_2$ is x^1, x^0.

(g) True False A basis for $\mathbb{P}_2$ is $\{x^1, x^1 + 1\}$.

(h) True False A basis for $\mathbb{P}_2$ is x^2, x^1, x^0.

(i) True False A basis for $\mathbb{P}_2$ is $\{x^1, x^1 + 1, x^2\}$.

(j) True False A basis for $\mathbb{P}_2$ is $\{x^1, x^1 + 1, x^2 + 1, x^2\}$.

PLEASE TURN OVER FOR QUESTION 2

(2) (10 points) In $\mathbb{R}^3$, find the coordinates of $\begin{bmatrix}1\\2\\3\end{bmatrix}$ with respect to the basis $\mathcal{B} = \{\begin{bmatrix}0\\0\\1\end{bmatrix}, \begin{bmatrix}0\\1\\1\end{bmatrix}, \begin{bmatrix}1\\1\\1\end{bmatrix}\}$. Show all necessary work to justify your answer.