Section 1.2 21

- In some cases a matrix may be row reduced to more than one matrix in reduced row echelon form, using different sequences of row operations. FALSE
- The row reduction algorithm applies only to augmented matrices for a linear system. FALSE
- A basic variable in a linear system is a variable that corresponds to a pivot column in the coefficient matrix. TRUE
- Finding a parametric description of the solution set of a linear system is the same as solving the system. TRUE
- If one row in an echelon form of an augmented matrix is $[0\,0\,0\,5\,0]$, then the associated linear system is inconsistent. FALSE

Section 1.2 22

- The echelon form of a matrix is unique FALSE
- The pivot positions in a matrix depend on whether row interchanges are used n the row reduction process. FALSE
- Reducing a matrix to echelon form is called the forward phase of the row reduction process. TRUE
- Whenever a system has free variables, the solution set contains many solutions. FALSE
- A general solution os a system is an explicit description os all solutions of the system. TRUE

Section 1.3 23

- Another notation for the vector $\begin{bmatrix} -4 \\ 3 \end{bmatrix}$ is $\begin{bmatrix} -4 & 3 \end{bmatrix}$. FALSE
- The points in the place corresponding to $\begin{bmatrix} -2 \\ 5 \end{bmatrix}$ and $\begin{bmatrix} -5 \\ 2 \end{bmatrix}$ lie on a line through the origin. FALSE
- An example of a linear combination of vectors v_1 and v_2 is the vector $1/2v_1$ TRUE
- The solution set of the linear system whose augmented matrix is $[a_1\ a_2\ a_3\ b]$ is the same as the solution set of the equation $x_1a_1 + x_2a_2 + x_3a_3 = b$ TRUE
- The set Span $\{u, v\}$ is always visualized as a plane through the origin. FALSE

Section 1.3 24

- Any list of five real numbers is a vector in $\mathbb{R}^5$. TRUE
- The vector u results when a vector $u - v$ is added to the vector v. TRUE
- The weights $c_1, \ldots, c_p$ is a linear combination $c_1 v_1 + \cdots + c_p v_p$ cannot all be zero. FALSE
- When u and v are nonzero vectors, Span $\{u, v\}$ contains the line through u and the origin. TRUE
- Asking whether the linear system corresponding to an augmented matrix $[a_1\ a_2\ a_3\ b]$ has a solution amounts to asking whether b is in Span $\{a_1, a_2, a_3\}$. TRUE

Section 1.4 23

- The equation $Ax = b$ is referred to as the vector equation. FALSE
- The vector b is a linear combination of the columns of a matrix A if and only if the equation $Ax = b$ has at least one solution. TRUE
- The equation $Ax = b$ is consistent if the augmented matrix $[A\, b]$ has a pivot position in every row. FALSE
- The first entry in the product Ax is a sum of products. TRUE
- If the columns of an $m \times n$ matrix span $\mathbb{R}^m$, then the equation $Ax = b$ is consistent for each b in $\mathbb{R}^m$ TRUE
- If A is an $m \times n$ matrix and if the equation $Ax = b$ is inconsistent for some b in $\mathbb{R}^m$, then A cannot have a pivot position in every row. TRUE

Section 1.4 24

- Every matrix equation $Ax = b$ corresponds to a vector equation with the same solution set. TRUE
- Any linear combination of vectors can always be written in the form Ax for a suitable matrix A and vector x. TRUE
- The solution set of the linear system whose augmented matrix is $[a_1\ a_2\ a_3\ b]$ is the same as the solution set of $Ax = b$, if $A = [a_1\ a_2\ a_3]$ TRUE
- If the equation $Ax = b$ is inconsistent, then b is not in the set spanned by the columns of A. TRUE
- If the augmented matrix $[A\ b]$ has a pivot position in every row, then the equation $Ax = b$ is inconsistent. FALSE
- If A is an $m \times n$ matrix whose columns do not span $\mathbb{R}^m$, then the equation $Ax = b$ is inconsistent for some b in $\mathbb{R}^m$. TRUE