Assignment 0

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

Due on 2018-08-27, 23:59 IST.

1) Let $A = \begin{bmatrix} 1 & 2 & 3 \\ 1 & 3 & 2 \\ 2 & 6 & 3 \end{bmatrix}$. If $A^{-1} = \begin{bmatrix} \alpha & -12 & 5 \\ -1 & 3 & \beta \\ 0 & 2 & -1 \end{bmatrix}$, then $\alpha + \beta$ equals

- $0$
- $1$
- $2$
- $3$

No, the answer is incorrect.
Score: $0$
Accepted Answers:

2) In above problem, if $A \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 1 \\ 3 \\ 5 \end{bmatrix}$, then

- $x=1, y=3, z=1$
- $x=-1, y=3, z=2$
- $x=1, y=2, z=1$
- $x=-8, y=3, z=1$

No, the answer is incorrect.
Score: $0$
Accepted Answers:

3) The optimal value of the linear programming problem:

- $x=-8, y=3, z=1$

The optimal value of the linear programming problem: $1$ point
No, the answer is incorrect.
Score: 0
Accepted Answers:
-5

4) *The optimal value of the linear programming problem* :

\[
\begin{align*}
\text{max } z &= 3x + 2y \\
\text{s.t } &2x + 3y \leq 6, \\
&x \leq 2, \\
&x, y \geq 0,
\end{align*}
\]

\[\text{is}\]

- 0
- 4
- 6
- 22
- 3

No, the answer is incorrect.
Score: 0
Accepted Answers:
\[\frac{22}{3}\]

5) *The optimal solution \((x, y)\) of the linear programming problem* :

\[
\begin{align*}
\text{max } z &= 2x + 3y \\
\text{s.t } &x + 3y \leq 6 \\
&3x + 2y \leq 6 \\
&x, y \geq 0
\end{align*}
\]

\[\text{is}\]

- \((0,0)\)
- \((2,0)\)
- \((0,2)\)
- \((\frac{6}{7}, \frac{12}{7})\)

No, the answer is incorrect.
Score: 0
Accepted Answers:
\[\left(\frac{6}{7}, \frac{12}{7}\right)\]

6) Which of the following problem is NOT a linear programming problem

\[
\begin{align*}
\text{max } z &= 3x - 2y \\
\text{s.t } &2x + y \geq 6 \\
&x, y \in \mathbb{R}
\end{align*}
\]
7) \[
\begin{align*}
\text{min } x + 2y \\
\text{s.t. } x - y & \leq 1 \\
x, y & \geq 0 \text{ and integers}
\end{align*}
\]
\[
\begin{align*}
\text{max } x - 2y \\
\text{s.t. } xy & \leq 10 \\
x, y & \geq 0
\end{align*}
\]
\[
\begin{align*}
\text{min } x + 2y \\
x + 2y & \leq \pi \\
x, y & \geq 0.
\end{align*}
\]
No, the answer is incorrect.
Score: 0
Accepted Answers:
\[
\begin{align*}
\text{max } x - 2y \\
\text{s.t. } xy & \leq 10 \\
x, y & \geq 0
\end{align*}
\]

7) \[
\text{Let } S_1 = \{(x, y) \in \mathbb{R}^2; x^2 + y^2 \leq 1 \} \text{ and } S_2 = \{(x, y) \in \mathbb{R}^2; x + y \leq 1 \text{ and } x, y \geq 0 \}.
\]
Then \( S_1 \cap S_2 \) is

- an empty set
- \( S_1 \)
- \( \{(x, y) \in \mathbb{R}^2; x + y \leq 1 \} \)
- \( S_2 \)

No, the answer is incorrect.
Score: 0
Accepted Answers:
\( S_1 \)

8) Consider the system of linear equations
\[
\begin{align*}
x + y + z &= 6 \\
x - y + z &= 2.
\end{align*}
\]
Then the system has

- a unique solution
- infinite number of solution
- no solution
- the whole \( \mathbb{R}^3 \) as its solutions

No, the answer is incorrect.
Score: 0
Accepted Answers:
infinite number of solution

9)
The solution of the linear system of equations

\[ x + 2y + 3z = 1 \]
\[ x + 3y + 6z = 2 \]
\[ 2x + 6y + 3z = 3 \]

is

\[ x = -\frac{2}{3}, y = \frac{2}{3}, z = \frac{1}{9} \]
\[ x = -\frac{2}{3}, y = \frac{2}{3}, z = \frac{1}{3} \]
\[ x = 0, y = -3, z = 2 \]
\[ x = -4, y = 2, z = 3 \]

No, the answer is incorrect.
Score: 0
Accepted Answers:
\[ x = -\frac{2}{3}, y = \frac{2}{3}, z = \frac{1}{9} \]

\[ \text{Let } x = (1, 0) \text{ and } y = (0, 1). \text{ Then the set } \mathbb{R}^2 = \{ \alpha x + \beta y \}, \text{ if } \]

\[ \alpha \in \mathbb{R}, \beta \in \mathbb{R} \]
\[ \alpha \in \mathbb{R}, \beta \in \mathbb{Z} \]
\[ \alpha \in \mathbb{Z}, \beta \in \mathbb{R} \]
\[ \alpha \in \mathbb{Z}, \beta \in \mathbb{Z} \]

No, the answer is incorrect.
Score: 0
Accepted Answers:
\[ \alpha \in \mathbb{R}, \beta \in \mathbb{R} \]