Assignment 6A - Objective

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

1) Consider $f : [-1, 2] \rightarrow \mathbb{R}$ defined by
$$f(x) = \begin{cases} -x, & -1 \leq x \leq 0 \\ 2x^3 - 4x^2 + 2x, & 0 < x \leq 2 \end{cases}$$

Then
- The absolute minimum of $f$ is attained at $x = 0$, 1 and absolute maximum of $f$ is attained at $x = 2$.
- The absolute minimum of $f$ is attained at $x = 0$ and absolute maximum of $f$ is attained at $x = 1$.
- The absolute minimum of $f$ is attained at $x = 0$ and absolute maximum of $f$ is attained at $x = 1.5$.
- The absolute minimum of $f$ is attained at $x = 0, 1$ and absolute maximum of $f$ is attained at $x = 1/3$.

No, the answer is incorrect.
Score: 0

Accepted Answers:
The absolute minimum of $f$ is attained at $x = 0, 1$ and absolute maximum of $f$ is attained at $x = 2$.

2) Fix $r > 0$ and consider a circle of radius $r$. Then the maximum possible area of an inscribed rectangle is
$$2r^2$$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$2r^2$

3) Consider $f : (1, \infty) \rightarrow \mathbb{R}$ defined as
$$f(x) = \frac{1}{x}, \quad \text{for all } x \in (1, \infty).$$

Then
- $f$ has a local minimum at $x = e$, which is not an absolute minimum.
- $f$ has a local minimum at $x = e$, which is an absolute minimum.
- $f$ has a local maximum at $x = e$, which is not an absolute maximum.
- $f$ has a local maximum at $x = e$, which is an absolute maximum.

No, the answer is incorrect.
Score: 0

Accepted Answers:
$f$ has a local minimum at $x = e$, which is an absolute minimum.

4) State whether true or false.
$$\sqrt{x} \geq \ln x, \quad \text{for all } x \geq 1.$$

- True
- False

No, the answer is incorrect.
Score: 0

Accepted Answers:
True