Weekly Quiz #9

Problem 1.

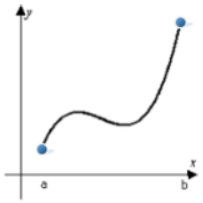
Determine from the graph whether the function has any absolute extreme values on the interval [a, b].

Answers *

- Absolute minimum only.
- Absolute minimum and absolute maximum
- No absolute extrema
- ✓ Absolute maximum only

Problem 2.

Determine from the graph whether the function has any absolute extreme values on the interval [a, b].



Answers *

- No absolute extrema.
- ✓ Absolute minimum and absolute maximum.
- Absolute maximum only.
- Absolute minimum only.

Problem 3.

Find the absolute extreme values of the function on the interval.

$g(x) = -x^2 + 11x - 30, \quad 5 \leq x \leq 6$

Answers *

- absolute maximum is 5/4 at x = 13/2 ; absolute minimum is 0 at 6 and 0 at x = 5
- absolute maximum is 241/4 at x = 11/2 ; absolute minimum is 0 at 6 and 0 at x = 5
- ✓ absolute maximum is 1/4 at x = 11/2 ; absolute minimum is 0 at 6 and 0 at x = 5
- absolute maximum is 1/4 at x = 13/2 ; absolute minimum is 0 at 6 and 0 at x = 5

Problem 4

Find the absolute extreme values of the function on the interval.

$F(x) = -\frac{1}{x^2}, \quad 0.5 \leq x \leq 5$

Answers *

- absolute maximum is – 1/25 at x = 5; absolute minimum is -4 at x = - 1/2
- absolute maximum is – 1/25 at x = 1/2 ; absolute minimum is -4 at x = -5
- ✓ absolute maximum is – 1/25 at x = 5; absolute minimum is -4 at x = 1/2
- absolute maximum is 1/25 at x = 1/2 ; absolute minimum is -4 at x =5

Problem 5.

Find the absolute extreme values of the function on the interval.

$g(x) = 10 - 6x^2, \ -2 \leq x \leq 5$

Answers *

- absolute maximum is 20 at x = 0; absolute minimum is -14 at x = 5
- ✓ absolute maximum is 10 at x = 0; absolute minimum is -140 at x = 5
- absolute maximum is 6 at x = 0; absolute minimum is -160 at x = 5
- absolute maximum is 60 at x = 0; absolute minimum is -14 at x = -2

Problem 6.

Find the absolute extreme values of the function on the interval.

$$f(x) = x^{\frac{2}{3}}, \quad -1 \leq x \leq 27$$

Answers *

- absolute maximum is 8 at x = 27; absolute minimum is 0 at x = 0
- absolute maximum is 9 at x = 27; absolute minimum does not exist
- ✓ absolute maximum is 9 at x = 27; absolute minimum is 0 at x = 0
- absolute maximum is 9 at x = 27; absolute minimum is 1 at x = -1

Problem 7.

Find the extreme values of the function and where they occur.

$$f(x) = x^2 + 2x - 3$$

Answers *

- Absolute minimum is -1 at x = 4.
- Absolute minimum is 1 at x = 4.
- Absolute minimum is 1 at x = -4.
- ✓ Absolute minimum is -4 at x = -1

Problem 8.

Find the extreme values of the function and where they occur.

$$f(x) = (x - 4)^{2/3}$$

Answers *

- Absolute minimum value is 0 at x = -4.
- There are no definable extrema.
- Absolute maximum value is 0 at x = -4.
- ✓ Absolute minimum value is 0 at x = 4

Problem 9.

Identify the critical values of function $y = 2x^3 - 3x^2$.

Answers *

- [ ] -1, 1
- [ ] 0, 0
- [ ] 0, -1
- [x] 0, 1

Problem 10.

Identify the critical values of function $y = 2x^3 - 3x^2$.

Answers *

- [ ] -1, 1
- [ ] 0, 0
- [ ] 0, -1
- [x] 0, 1

Problem 11

For what value of x does the function $y = x^3 - 6x$ have a local minimum?

Answers *

- [ ] 0
- [x] $\sqrt{2}$
- [ ] $-\sqrt{2}$
- [ ] 6

Problem 12.

Find the x-coordinate(s) of the inflection point(s) of the curve of the following function $y = \frac{x^3}{3} - x^2$

Answers *

- [x] 1
- [ ] 0, 2
- [ ] 0, 1
- [ ] 1, 2

Problem 13.

The function $f(x)=x^2+2x^3$ has

Answers *

- [ ] no relative extrema
- [x] two relative extrema and one inflection point
- [ ] one relative extrema and two inflection points
- [ ] one relative extrema and one inflection point
- [ ] three relative extrema and two inflection point

Problem 14.

Let $f(x)=\frac{x^3}{3}-\frac{x^2}{2}-10x$. Which of the following statements must be true?

Answers *

- [ ] f(x) has critical points at −2, 5 and 3/2.
- [x] f(x) has critical points at −2 and 5, and an inflection point at 3/2.
- [ ] f(x) has critical points at −2 and 5 but has no inflection points.
- [ ] f(x) has an inflection point at 3/2 but has no critical points.