Section 14

BIRZEIT UNIVERSITY
MATHEMATICS DEPARTMENT
MATH1411 - QUIZ 2

Key.

Name :..... Student Number..... Section 10/10

Question #1:Circle the correct answer

1) Assume $f(1) = 6,\ f'(1) = -2,$ and $h(x) = \sqrt{x}f(x)$. Then $h'(1)=$

a) -1

b) 0

c) 1

2) The minimum value of $f(x) = (x-2)(x-3)^2$ is

a) 0

b) $\frac{7}{3}$

c) 3

3) Find all x values the graph of the curve $y = 4x^4 - 2x^2 - 4$ has a horizontal tangent

a) $x = 0, x = \frac{1}{2}$

b) $x = 0, x = \frac{1}{2}, x = \frac{-1}{2}$

c) $x = 0, x = \frac{1}{4}, x = \frac{-1}{4}$

4) The value of c in Rolle 's Theorem when $f(x) = e^x \cos x\ , x \in [0, \pi]$

a) $\frac{\pi}{2}$

b) $\frac{\pi}{4}$

c) $\frac{3\pi}{4}$

5) If $x^2 + y^2 = 1$, then the second derivative $\frac{d^2y}{dx^2} =$

a) $\frac{-x}{y^2}$

b) $\frac{x^2+y^2}{y^3}$

c) $\frac{-1}{y^3}$

Section 6

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Name :..... Student Number..... Section ..... 10/10.

Question #1:Circle the correct answer

1)The value of c that satisfy Rolle's Theorem when $f(x) = 2x^3 - 5x^2 - 4x + 3$, $x \in [\frac{1}{3}, 3]$

a) 2

b) $\frac{1}{3}$

c) $\frac{2}{3}$

2)

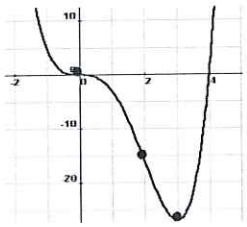
$$\lim_{x \longrightarrow 0} \frac{(1 + 2(a+h)^2)^3 - (1 + 2a^2)^3}{h}$$

a) $4a(1 + 2a^2)^2$

b) $(1 + 2a^2)^3$

c) $12a(1 + 2a^2)^2$

(3-5) Use the graph below to answer the following questions



3) Decreasing in the intervals

a) $x \leq 3$

b) $0 \leq x \leq 4$

c) $0 \leq x \leq 3$

4) Inflection points at:

a) (0,0)

b) (0,0) and (3,-27)

c) (0,0) and (2,-16)

5) Concave Up in the intervals

a) $x \leq 0$ and $x \geq 3$

b) $0 \leq x \leq 4$

c) $x \leq 0$ and $x \geq 2$

Key.

Section 1

BIRZEIT UNIVERSITY
MATHEMATICS DEPARTMENT
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Name :..... Student Number..... Section 10/10

Question #1:Circle the correct answer

1) If $f(x)$ is a function such that $f'(x)$ is negative and decreasing on an interval I, then $f(x)$ is

a) Increasing and concave down

b) Decreasing and concave down

c) Decreasing and concave up

2) The point on the curve $y = x^2 - 3x + 2$ where the tangent is perpendicular to $y = x$ is:

a) $(4, 2)$

b) $(2, 0)$

c) $(1, 0)$

3) If the function $f(x) = x^3 + ax^2 + bx + 1$ is maximum at $x = 0$ and minimum at $x = 1$, then

a) $a = \frac{2}{3}, b = 0$

b) $a = 0, b = \frac{2}{3}$

c) $a = \frac{-3}{2}, b = 0$

4) The graph of $y = x^3 + x^2 - 27x$ is concave down for

a) $-6 \leq x \leq 2$

b) $x \leq \frac{-1}{3}$

c) $x \geq 0$

5) The values of c that satisfy Rolle's Theorem when $f(x) = \cos(2x)$, $x \in [0, 2\pi]$

a) $\{n\pi, n \in \mathbb{Z}\}$

b) $\{\frac{n\pi}{2}, n \in \mathbb{Z}\}$

c) $\{\frac{\pi}{2}, \pi, \frac{3\pi}{2}\}$

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Section 21

Name :..... Student Number..... Section 10/10

Question #1:Circle the correct answer

1) If $f'(c) = 0$ at an interior point c, then f has a local extreme value at x=c.

a) True

b) False

2) The minimum value of $f(x) = (x-2)(x-3)^2$ is

a) 0

b) $\frac{7}{3}$

c) 3

3) If the differential of the function $f(x) = \alpha\sqrt{x}$ when x changes from 1 to 4 is 12, then the value of the constant α is

a) 2

b) 4

c) 8

4) For the function $f(x) = x + \frac{1}{x}, x \in [1,3]$, the value of c for the mean value theorem is

a) 2

b) $\sqrt{3}$

c) $\{\sqrt{3}, -\sqrt{3}\}$

5) The function $f(x) = x^3 - 6x^2 + 15x - 12$ is :

a) Increasing on $\mathbb{R}$

b) Decreasing on $\mathbb{R}$

c) None of the above