

Course's Name :Calculus 1	Palestine Technical University - Kadoorie	Instructor's Name :
Course's Number :15010101	 Second Exam Second Semester 2016/2017	Student'sName:
Exam's Period : 1 hour		Student'sNumber:
Questions' Number : 4		Section'sNumber:
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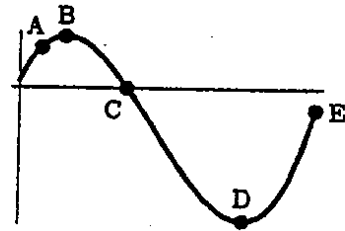
Q1) 20 pts (2 pts each)

Choose the correct answer :

1) If $f(x) = \sqrt{\sin x + 4}$, then $f'(0) =$

- | | |
|------------------|------------------|
| a) $\frac{1}{2}$ | b) $\frac{1}{4}$ |
| c) 0 | d) 2 |

2) The figure below shows the velocity of a moving particle as a function of time . At which of the points is the greatest speed



- | | |
|------|------|
| a) B | b) D |
| c) A | d) E |

3) The absolute maximum value of $f(x) = 3x^2 - x^3$ is :

- | | |
|------|------|
| a) 0 | b) 2 |
| c) 4 | d) 1 |

4) The slope of the tangent line to the curve of $f(x) = 2 \sec x$ at $x = \frac{\pi}{4}$ is :

- | | |
|----------------|-------------------------|
| a) $2\sqrt{2}$ | b) $\frac{2}{\sqrt{2}}$ |
| c) 4 | d) 2 |

Q2) 10 pts

a) If $f(x) = x^3$, find the value of $c \in (-1,2)$ that satisfy the conclusion of the Mean value theorem . (5 pts)

b) If $x + y = xy$, find $\frac{dy}{dx}$ at the point (2,2) (5pts)

Q3) 10 pts

A ladder (سلم) 10 feet long leans against (يستند على) a vertical wall . The bottom of the ladder moves away from the wall at 2 feet per second . How fast is the top sliding down the wall when it is 6 feet above the ground

Q4) 20 pts

If $f(x) = x^4 + \frac{4}{3}x^3 - 6$ on the interval $[-2, 2]$, then find the following :

- 1) The critical points of f (3 pts)

- 2) The intervals on which f is increasing and decreasing (4 points)

- 3) Local and absolute extrema (4 pts)

- 4) Determine concavity (6 pts)

- 5) The points of inflection (3 pts)

Good luck