**Advanced Mathematics 1 (Examination Office)**

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**Quiz Chapter 11**

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Question 1

Marks: 1

Find [\frac{\partial^2 f}{\partial x\partial y}](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?\frac%7b\partial%5e2+f%7d%7b\partial+x\partial+y%7d)for   
f(x, y) = xy2 + yex2 + 5

Choose one answer.

|  |  |  |
| --- | --- | --- |
|  | a. [\frac{\partial^2 f}{\partial x\partial y}=y+2xe^{x^2}](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?\frac%7b\partial%5e2+f%7d%7b\partial+x\partial+y%7d=y+2xe%5e%7bx%5e2%7d) |  |
|  | b. [\frac{\partial^2 f}{\partial x\partial y}=2y+2xe^{x^2}](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?\frac%7b\partial%5e2+f%7d%7b\partial+x\partial+y%7d=2y+2xe%5e%7bx%5e2%7d) |  |
|  | c. [\frac{\partial^2 f}{\partial x\partial y}=2y+2xye^{x^2}](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?\frac%7b\partial%5e2+f%7d%7b\partial+x\partial+y%7d=2y+2xye%5e%7bx%5e2%7d) |  |
|  | d. [\frac{\partial^2 f}{\partial x\partial y}=2y+e^{x^2}](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?\frac%7b\partial%5e2+f%7d%7b\partial+x\partial+y%7d=2y+e%5e%7bx%5e2%7d) |  |

Question 2

Marks: 1

The length *l*, width *w* and height *h* of a box change with time. At a certain instant the dimensions are

*l* = 3 and *w* = *h* = 5, and *l* and *w* are increasing at a rate of 10 m/s while *h* is decreasing at a rate of 1 m/s. At that instant find the rates at which the surface area is changing.

Choose one answer.

|  |  |  |
| --- | --- | --- |
|  | a. 346 |  |
|  | b. 345 |  |
|  | c. 344 |  |
|  | d. 343 |  |

Question 3

Marks: 1

Find the directional derivative of [f(x,y)=\sqrt{xy}](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?f(x,y)=\sqrt%7bxy%7d)at P(3,5) in the direction of Q(3.920, 0.795).  
  
Select the correct answer. The choices are rounded to the nearest tenth.

Choose one answer.

|  |  |  |
| --- | --- | --- |
|  | a. -1.6 |  |
|  | b. 0.7 |  |
|  | c. 3.5 |  |
|  | d. -3.5 |  |
|  | e. 2.5 |  |

Question 4

Marks: 1

Find [f_y(-36,6)](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?f_y(-36,6))for f(x,y)=sin (2x+12y) .   
  
Select the correct answer.

Choose one answer.

|  |  |  |
| --- | --- | --- |
|  | a. 12 |  |
|  | b. 0 |  |
|  | c. -12 |  |
|  | d. 2 |  |
|  | e. -2 |  |

Question 5

Marks: 1

At what point is the following function a local minimum?   
  
[f(x,y)=6x^2+3y^2](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?f(x,y)=6x%5e2+3y%5e2)  
  
  
  
Select the correct answer.

Choose one answer.

|  |  |  |
| --- | --- | --- |
|  | a. ( 6, 3) |  |
|  | b. (0, 0) |  |
|  | c. (3, 0) |  |
|  | d. (6, -3) |  |
|  | e. (6, 0) |  |

Question 6

Marks: 1

Find the directional derivative of *f* at the given point in the direction indicated by the anglemc010-1.jpg.   
  
[f(x,y)=xe^{-4y}, (2, 0), \theta=\pi/2](http://cms.fpt.edu.vn/elearning/filter/tex/displaytex.php?f(x,y)=xe%5e%7b-4y%7d,+(2,+0),+\theta=\pi/2)

Choose one answer.

|  |  |  |
| --- | --- | --- |
|  | a. -14 |  |
|  | b. -12 |  |
|  | c. -8 |  |
|  | d. -10 |  |





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