

ENGR 222

Assignment 2 Submission

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1. Multivariate Function

$$f(x, y) = -2x^3 + 3x^2y + 2y^3 - 9y + 5$$

(a)

$$f_x = -6x^2 + 6xy$$
$$f_y = 3x^2 + 6y^2 - 9$$

(b)

$$f_{xy} = 6x$$
$$f_{xx} = -12x + 6y$$
$$f_{yy} = 12y$$

(c)

$$f_x = -6x^2 + 6xy = 0$$
$$\Rightarrow 6xy = 6x^2$$
$$\Rightarrow y = x(x \neq 0)$$
$$f_y = 3x^2 + 6y^2 - 9 = 0$$

(d)

2. Quick questions

(a)

(b)

(c)

(d)

(e)

3. Double integrals

(a)

(b)

(c)

(d)

(e)

4. Lab question

- (a)
 - i.
 - ii.
 - iii.
- (b)
 - i.
 - ii.
 - iii.