This print-out should have 8 questions. Multiple-choice questions may continue on the next column or page – find all choices before answering.

001 10.0 points

Find $\lim_{(x,y)\to(6,-3)} \left(x^5 + 2x^3y - 3xy^2\right)$.

1. 6642

2. 9234

3. 8910

4. 6318

5. 6156

002 10.0 points

Find $\lim_{(x,y)\to(0,0)} \dfrac{6xy^2}{x^2 + y^2}$, if it exists.

1. 3

2. The limit does not exist.

3. 0

4. 12

5. 6

003 10.0 points

Find $\lim_{(x,y)\to(0,0)} \dfrac{4xy}{\sqrt{x^2 + y^2}}$, if it exists.

1. The limit does not exist.

2. 2

3. 0

4. 8

5. 4

004 10.0 points

Find $\lim_{(x,y)\to(0,0)} \dfrac{5\left(x^2 + y^2\right)}{\sqrt{x^2 + y^2 + 16} - 4}$, if it exists.

1. 20

2. 0

3. The limit does not exist.

4. 5

5. 40

005 10.0 points

Find $\lim_{(x,y)\to(0,0)} \dfrac{2xy^4}{x^2 + y^8}$, if it exists.

1. 1

2. The limit does not exist.

3. 0

4. 2

5. 4

006 10.0 points

Determine $f_x - f_y$ when

$$f(x, y) = 4x^2 + xy - 4y^2 + 2x + y \,.$$

1. $f_x - f_y = 9x - 7y + 3$

2. $f_x - f_y = 9x - 7y + 1$

3. $f_x - f_y = 7x + 9y + 3$

4. $f_x - f_y = 7x - 7y + 1$

5. $f_x - f_y = 7x + 9y + 1$

6. $f_x - f_y = 9x + 9y + 3$

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007   10.0 points

Determine f_x when

$$f(x, y) = \frac{2x - y}{2x + y}.$$

1. $f_x = -\dfrac{5x}{(2x + y)^2}$

2. $f_x = -\dfrac{3y}{(2x + y)^2}$

3. $f_x = \dfrac{5y}{(2x + y)^2}$

4. $f_x = -\dfrac{4x}{(2x + y)^2}$

5. $f_x = \dfrac{3x}{(2x + y)^2}$

6. $f_x = \dfrac{4y}{(2x + y)^2}$

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008   10.0 points

Determine f_x when

$$f(x, y) = (2x - y)\, e^{x/y}.$$

1. $f_x = \left(\dfrac{x}{y} - 1\right) e^{x/y}$

2. $f_x = \left(\dfrac{2x}{y} + 1\right) e^{x/y}$

3. $f_x = \left(\dfrac{x}{y} - 3\right) e^{x/y}$

4. $f_x = \left(\dfrac{x}{y} + 3\right) e^{x/y}$

5. $f_x = \left(\dfrac{2x}{y} - 1\right) e^{x/y}$

6. $f_x = \left(\dfrac{2x}{y} + 3\right) e^{x/y}$