Find the volume of the solid generated by revolving the given region about the x-axis:

$$y = -x^2 + 4x + 15, \quad y = 15 - x$$

(If your answer involves "pi", enter your answer in the order  $pi^*$ expression.) Volume =  $\int$ 

Tries 0/3

(Round you	ar answer to 1 decimal place.)	
Volume =		units <sup>3</sup>
Tries 0/	3	

Find the volume of the solid generated by rotating  $y = \sqrt{3x} + \sqrt{\frac{x}{3}}$  about the x-axis from x = 4 to x = 6. (Bound your approximate 2 dot in the left)

(Round your answer to 3 decimal places).

Tries 0/3

The shape of a fuel tank for the wing of a jet aircraft is designed by revolving the region bounded by the function  $y = \frac{25}{19}x^2\sqrt{3-x}$  and the x-axis, where  $0 \le x \le 3$ , about the x-axis. Given x and y are in meters, find the volume of the fuel tank.

Volume = $\int$		
Tries 0/3		
(Round your answer to two decimal places )		
Volume = $m^3$		
Iries 0/3		

The equation

$$\frac{x^2}{4} + \frac{y^2}{25} = 1$$

describes an ellipse. Find the volume of the solid obtained by rotating the ellipse around the x-axis and also around the y-axis. These solids are called **ellipsoids**; one is vaguely rugby-ball shaped, one is sort of flying-saucer shaped, or perhaps squished-beach-ball-shaped.

(Round your answers to 3 decimal places).

- , (a) around the x-axis [Tries 0/3 (b) around the *y*-axis Tries 0/3

ſ

Find the volume of the solid generated by revolving the given region about the y-axis:

$$y = \frac{5}{14} \ln x, \quad y = 0, \quad x = e^3.$$

(If your answer involves "pi", enter your answer in the order expression\*pi.)

Volume =

Tries 0/3

(Round yo	ur answer	to 3 d	lecimal	place	es).
Volume =					$units^3$
Tries $0/3$					

Find the volume of the solid generated by revolving the region inside the circle  $x^2 + y^2 = 36$  and to the right of the line x = 3 about the y-axis.

(Round your answer to 3 decimal places)

Tries 0/3

Find the volume of the solid generated by revolving the region enclosed by the curves

$$\frac{5}{4}y = e^{5x}$$
,  $x = 0$ , and  $y = 4e^{\frac{5}{4}}$ 

about the *x*-axis.

Accurately sketch a labeled graph of the region.

(Round your answer to one decimal place.) [

Tries 0/3

Find the volume of the solid that results by revolving the region enclosed by the curves

$$y = 7x, x = 1, x = 6, \text{ and } y = 0$$

about the y-axis.

(Round your answer to 3 decimal places).

Tries 0/3

Find the volume of the solid generated by revolving the given region about the line y = 12:

$$y = \frac{11}{x}, \quad y = 0, \quad x = 1, \quad x = 8.$$

(If your answer involves "pi", enter your answer in the order expression\*pi.)



Find the volume of the solid generated by revolving the given region about the line y = 10:

$$y = \frac{7}{5}x^2$$
,  $x = 0$ ,  $y = 8$ .

(If your answer involves "pi", enter your answer in the order expression\*pi.)

Volume =  $\int$  Tries 0/3(Round your answer to 2 decimal places). Volume = \_\_\_\_\_\_ units<sup>3</sup> Tries 0/3

Find the volume of the solid generated by revolving the given region about the line y = 7:

 $y = -x^2 + 4x - 1$  and y = -1 - x.

(Use "pi" for  $\pi$ ). (If your answer involves "pi", enter your answer in the order expression\*pi.)

Tries 0/3

Find the volume of the solid generated by revolving the given region about the line x = 19:

$$y = 9 - x$$
,  $y = 0$ ,  $y = 5$ ,  $x = 0$ .

(If your answer involves "pi", enter your answer in the order expression\*pi.)

(Round your answer to 3 decimal places).	
Volume = $\int$	
Tries 0/3	
(Round your answer to 3 decimal places.) Volume = $\_$ units <sup>3</sup> Tries 0/3	

Let S be the region of the xy-plane bounded above by the curve  $x^3y = 2197$ , below by the line y = 1, on the left by the line  $x = \frac{13}{2}$ , and on the right by the line x = 13. Find the volume of the solid obtained by rotating S around

(a) the <i>x</i> -axis
Tries 0/3
(b) the line $y = 1$
Tries 0/3
(c) the <i>y</i> -axis
Tries 0/3
(d) the line $x = \frac{13}{2}$
Tries 0/3
(Round your answers to 3 decimal places).

Find the volume of the solid generated by revolving the region enclosed by the curves

$$y = \frac{7}{2}\sqrt{x}, \ y = 0, \ \text{and} \ x = 6$$

about the line x = 11.

(If your answer involves "pi", enter your answer in the order expression\*pi.) Accurately sketch a labeled graph of the region.

Volume =  $\int$  Tries 0/3(Round your answer to two decimal places.) Volume = \_\_\_\_\_\_ units<sup>3</sup> Tries 0/3 A propane tank is in the shape generated by revolving the region enclosed by the right half of the graph of

$$x^{2} + 49y^{2} = 196$$
 and the *y*-axis

about the y-axis. If x and y are measured in meters find the depth of the propane in the tank when it is filled to one-quarter of the tank's volume. (Round to 3 decimal places).

HINT: You will need to use a Graphing Calculator, Online Graphing Calculator, or Computer Algebra System to solve an equation towards the end of your solution to this problem.

Tries 0/3

Suppose a nuclear accident causes plutonium to be released into the atmosphere. The total amount of energy that has been released by time a is given by

$$\int_0^a 4e^{-7t} dt$$

What is the total amount of energy that will be given off over all time? (Round your answer to 3 decimal places)

(Answer "diverges" if the integral diverges)

Tries 0/3

Evaluate

$$\int_5^\infty \frac{5}{x(10\ln x)^2} \, dx$$

(Round your answer to 4 decimal places) (Answer "diverges" if the integral diverges) Tries 0/3

Evaluate

$$\int_{1}^{\infty} \frac{9x^2}{(3x^3+5)^{5/2}} \, dx.$$

(Round your answer to 6 decimal places)

(Answer "diverges" if the integral diverges)

Compute

$$\int_0^\infty \frac{3x}{e^{6x}} dx$$

(Round your answer to 3 decimal places)

(Answer "diverges" if the integral diverges)

Evaluate

$$\int_1^\infty \frac{6e^{-4\sqrt{x}}}{3\sqrt{x}}\,dx\,,$$

rounding to 4 decimal places. (Answer "diverges" if the integral diverges) Tries 0/3

Evaluate

$$\int_4^8 \frac{1}{\sqrt[3]{x-4}} dx.$$

(Round your answer to 3 decimal places)

(Answer "diverges" if the integral diverges)
Tries 0/3

Compute

(Answer "diverges" if the integral diverges)  $\begin{bmatrix} Tries 0/3 \end{bmatrix}$ 

## Evaluate

$$\int_{1}^{\infty} 7(x-1)e^{-5x}dx$$

 $\int_1^\infty \frac{8}{\sqrt[6]{x^5}} dx.$ 

(Answer "diverges" if the integral diverges) Tries 0/3

Evaluate

$$\int_{1}^{\infty} \frac{1}{7x+7} dx.$$

(Answer "diverges" if the integral diverges)
Tries 0/3

Evaluate

 $\int_0^{4\pi} 6 \tan\left(\frac{\theta}{8}\right) \, d\theta.$ 

(Answer "diverges" if the integral diverges)

$$\int_{1}^{\infty} -28x^2 e^{-2x^3} dx =$$

(Answer "diverges" if the integral diverges).

Tries 0/3

Evaluate

$$\int_{7}^{\infty} \frac{1}{x \ln(7x^2)} dx$$

(Write "diverges" if the function diverges) Tries 0/3

Use summation notation to write the series in compact form.

$$17 - \frac{34}{8} + \frac{51}{27} - \frac{68}{64} + \frac{85}{125} - \cdots$$

NOTE: ONLY 2 ANSWER TRIES ON THIS PROBLEM.

A.  $\sum_{n=1}^{\infty} \frac{(-1)^n 17n}{n^3}$ B.  $\sum_{n=1}^{\infty} \frac{(-1)^n n}{n^3}$ C.  $\sum_{n=1}^{\infty} \frac{(-1)^{n+1} 17n}{n^2}$ D.  $\sum_{n=1}^{\infty} \frac{(-1)^{n+1} n}{n^3}$ E.  $\sum_{n=1}^{\infty} \frac{(-1)^{n+1} 17n}{n^3}$ 

Tries 0/2

Use summation notation to write the series in compact form.

$$\frac{e}{8} + \frac{e^2}{16} + \frac{e^3}{48} + \frac{e^4}{192} + \frac{e^5}{960} + \dots$$

NOTE: ONLY 2 ANSWER TRIES ON THIS PROBLEM.

A.  $\sum_{n=1}^{\infty} \frac{e^n}{8n}$ B.  $\sum_{n=0}^{\infty} \frac{e^n}{8n}$ C.  $\sum_{n=1}^{\infty} \frac{e^n}{16n}$ D.  $\sum_{n=0}^{\infty} \frac{e^n}{8(n!)}$ E.  $\sum_{n=1}^{\infty} \frac{e^n}{8(n!)}$ 

Tries 0/2

Find the fourth partial sum of the series

$$\sum_{n=1}^{\infty} \frac{4}{3n^2}$$

(Write your answer as an exact value in the form of a simplified fraction.)

Tries 0/3

Compute

$$\sum_{n=1}^{\infty} \left(\frac{8}{20}\right)^n$$

(Round your answer to 3 decimal places)

Tries 0/3

Compute

$$\sum_{n=0}^{\infty} \frac{11^{n+1}}{18^n}$$

(Round your answer to 3 decimal places)

Tries 0/3

Use summation notation to write the series in compact form.

$$6 - \frac{24}{5} + \frac{96}{25} - \frac{384}{125} + \dots$$

## NOTE: ONLY 2 ANSWER TRIES ON THIS PROBLEM.

A. 
$$\sum_{n=1}^{\infty} \frac{3(-1)^n 2^{2n-1}}{5^n}$$
  
B.  $\sum_{n=1}^{\infty} \frac{3(-1)^{n+1} 2^{2n-1}}{5^n}$   
C.  $\sum_{n=1}^{\infty} \frac{3(-1)^{n+1} 2^{2n-1}}{5^{n-1}}$   
D.  $\sum_{n=1}^{\infty} \frac{3(-1)^{n+1} 2^{2n}}{5^{n-1}}$   
E.  $\sum_{n=1}^{\infty} \frac{3(-1)^n 2^{2n-1}}{5^{n-1}}$ 

Tries 0/2

Use summation notation to write the series in compact form.

 $7.\overline{3}$ 

## NOTE: ONLY 2 ANSWER TRIES ON THIS PROBLEM.

A. 
$$7 + \sum_{n=2}^{\infty} 3\left(\frac{1}{10}\right)^n$$
  
B.  $7 + \sum_{n=0}^{\infty} 3\left(\frac{1}{10}\right)^n$   
C.  $7 + \sum_{n=0}^{\infty} \frac{3}{10}\left(\frac{1}{10}\right)^n$   
D.  $7 + \sum_{n=1}^{\infty} \frac{3}{10}\left(\frac{1}{10}\right)^n$   
E.  $7 + \sum_{n=1}^{\infty} \frac{3}{100}\left(\frac{1}{10}\right)^n$ 

Tries 0/2

Compute

$$\sum_{n=0}^{\infty} \left( \frac{3}{4^n} + \frac{7}{5^n} \right)$$

(Round your answer to 3 decimal places)

Tries 0/3

If the given series converges, then find its sum and approximate your answer to 4 decimal places.

$$\sum_{n=0}^{\infty} 3e^{-0.6n}$$

Tries 0/3

Find the fifth partial sum of the series

$$\sum_{n=0}^{\infty} \frac{22(-1)^{n+1}n!}{3^n}$$

(Round your answer to 3 decimal places)

Tries 0/3

Compute

$$\sum_{n=1}^{\infty} \frac{6(-1)^n}{4^{2n}}$$

(Round your answer to 4 decimal places)

Tries 0/3

Compute

$$\sum_{n=0}^{\infty} \left( \frac{4}{(-4)^n} - \frac{8}{4^n} \right)$$

(Round your answer to 2 decimal places)

Tries 0/3

Determine whether the series converges and if so find its sum.

$$4 + \frac{16}{11} + \frac{64}{121} + \frac{256}{1331} + \dots$$

~ ~ ~

(Express your answer as an exact value using a simplified fraction.)

Suppose that in a country, 60% of all income the people receive is spent, and 40% is saved. What is the total amount of spending generated in the long run by a 44 billion dollar tax rebate which is given to the country's citizens to stimulate the economy if saving habits do not change? NOTE: Include the entire government tax rebate as part of the total spending. (Write your answer in billions rounded to two decimal places)

billions

Tries 0/3

A ball has the property that each time it falls from a height h onto the ground, it will rebound to a height of rh, where r is called the coefficient of restitution. Find the total distance traveled by a ball with r = 0.6 that is dropped from a height of 13 meters.

(Round your answer to 3 decimal places)

meters

Tries 0/3

Use the formula for a geometric series to compute the following.

$$\sum_{n=2}^{\infty} \frac{e^{0.6n}}{5^{n+1}}$$

Give your answer correct to 4 decimal places.

Tries 0/3

Determine whether the series converges and if so find its sum.

$$\frac{2209}{36} - \frac{47}{6} + 1 - \frac{6}{47} + \frac{36}{2209}.$$

(Round your answer to three decimal places.)

Tries 0/3

In a right triangle, a series of perpendicular line segments are drawn starting with an altitude using the vertex of the right angle in the triangle and the hypotenuse. Then subsequently continuing to draw altitudes from the right angles in the new right triangles created and which always include the vertex from the smallest angle in the original right triangle. The series of altitudes are drawn so they move closer and closer to the smallest angle in the original right triangle. Find the sum of all these perpendicular line segments if one of the angles of the triangle is 55 degrees and the side of the triangle adjacent to the this angle is 16 meters long. If this process continues indefinitely, what will be the total sum of the perpendicular line segments? First find the largest terms of the infinite series, then find the sum of the perpendicular line segments.

Enter the largest terms of the infinite series in order from larger to smaller as numbers. (Round your answers to 3 decimal places.) Total Sum = \_\_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ +... meters *Tries* 0/3 What is the total sum of the perpendicular line segments? (Round your answer to 3 decimal places.) Total Sum = \_\_\_\_\_\_\_ meters *Tries* 0/3

A patient is given an injection of 55 milligrams of a drug every 24 hours. After t days, the fraction of the drug remaining in the patient's body is

$$f(t) = 2^{-t/5}.$$

If the treatment is continued indefinitely, approximately how many milligrams of the drug will eventually be in the patient's body just prior to an injection? First find the largest terms of the infinite series, then approximate the total amount in the body.

Enter the three largest terms of the infinite series in order from larger to smaller as expressions. (Your answers should be entered as exact numbers in the form of simplified expressions.)

Total Amount in $Body =$	+	+	
+ milligrams			

Tries (	0/3
---------	-----

Approximately how many milligrams of the drug will eventually be in the patient's body just prior to an injection?

(Round your answer to 4 decimal places.)

Total Amount in Body = \_\_\_\_\_ milligrams

 $Tries \ 0/3$ 

How much money (in dollars) should you invest today at an annual interest rate of 6.9% compounded continuously so that, starting two years from today, you can make annual withdrawals of \$3400 in perpetuity?

If the annual withdrawals continue indefinitely, how much money should you invest today? First find the largest terms of the infinite series, then find the total amount you should invest today.

Enter the three largest terms of the infinite series in order from larger to smaller as numbers. (Round your answers to 3 decimal places.)

+

Money Invested =

What is the total dollar amount you should invest today? (Round your answer to the nearest cent.) Money Invested =  $\_$  dollars Tries 0/3

780 people are sent to a colony on Mars, and each subsequent year 780 more people are added to the population of the colony. The annual death proportion is 7%. Find the eventual population of the Mars colony after many years have passed, just before a new group of 780 people arrive at the colony.

(Round your answer to the nearest whole number.)

people

Tries 0/3

Compute the indicated function value:

$$f(x,y) = \frac{-4x + 6y}{-7x - y}; \quad f(3, -10).$$

(Round your answer to 3 decimal places).

Tries 0/3

Compute the indicated function value:

$$f(x,y) = \frac{x^2 - 9}{\ln(7y)\sqrt{7 - x}}; \quad f\left(2, \frac{e^6}{7}\right).$$

(Round your answer to 4 decimal places).

Tries 0/3

Find the domain of the following function of two variables:

$$f(x,y) = \frac{8e^{xy}}{19 - e^{xy}}.$$

NOTE: ONLY 2 ANSWER TRIES ON THIS PROBLEM.

A.  $\{(x, y) : e^{xy} < 19\}$ B.  $\{(x, y) : e^{xy} > 19\}$ C.  $\{(x, y) : e^{xy} \neq 19\}$  D.  $\{(x, y) : e^{xy} = 19\}$ E.  $\{(x, y) : e^{xy} \le 19\}$ F.  $\{(x, y) : e^{xy} \ge 19\}$ 

Tries 0/2

Find the domain of the following function of two variables:

$$f(x,y) = \frac{12x}{\ln(9x + 12y)}.$$

NOTE: ONLY 2 ANSWER TRIES ON THIS PROBLEM.

A.  $\{(x, y) : 9x + 12y > 0, 9x + 12y \le 1\}$ B.  $\{(x, y) : 9x + 12y > 0, 9x + 12y \ne 1\}$ C.  $\{(x, y) : 9x + 12y > 0, 12x \ne 1\}$ D.  $\{(x, y) : 9x + 12y < 0, 12x \ne 1\}$ E.  $\{(x, y) : 9x + 12y < 0, 9x + 12y \ne 1\}$ 

Tries 0/2

What do the level curves for

$$f(x,y) = 14\sqrt{y} + 9x^2$$

look like? NOTE: ONLY 2 ANSWER TRIES ON THIS PROBLEM.

- A. Lines
- B. Parabolas
- C. Circles
- D. Hyperbolas
- E. Point at the origin

Tries 0/2

The domain of the function

$$f(x,y) = \frac{4x}{\sqrt{15x - 3y - 18}}$$

is all ordered pairs (x, y) of real numbers such that: NOTE: ONLY 2 ANSWER TRIES ON THIS PROBLEM.

A.  $\{(x, y) \mid 15x - 3y > 18\}$ B.  $\{(x, y) \mid 15x - 3y < 18\}$ C.  $\{(x, y) \mid 15x - 3y \ge 18\}$  D.  $\{(x, y) \mid x, y \text{ any real numbers}\}$ E.  $\{(x, y) \mid 15x - 3y \neq 18\}$ 

Tries 0/2

A chain of paint store carries two brands of latex paint. Sales figures indicate that if the first brand it sold for x dollars per gallon and the second for y dollars per gallon, the demand for the first brand will be

 $D_1(x,y) = 300 - 10x + 100y$  gallons per month

and the demand for the second brand will be

 $D_2(x,y) = 600 + 70x - 10y$  gallons per month.

(a) Express the chain of paint store's monthly revenue from the sale of paint as a function of x and y. R(x,y) =

Tries 0/3

(b) Compute the revenue from part (a) if the first brand it sold for \$10 per gallon and the second for \$15 per gallon.

\$ \_\_\_\_\_\_ Tries 0/3

Find the domain of the following function of two variables.

$$\sqrt{4-x^2} + \sqrt{y^2 - 64}$$

NOTE: ONLY 2 ANSWER TRIES ON THIS PROBLEM.

 $\begin{array}{l} \text{A. } \{(x,y) \mid |x| \leq 2 \text{ and } |y| \geq 8 \} \\ \text{B. } \{(x,y) \mid |x| \leq 2 \text{ and } |y| \leq 8 \} \\ \text{C. } \{(x,y) \mid |x| < 2 \text{ and } |y| < 8 \} \\ \text{D. } \{(x,y) \mid |x| > 2 \text{ and } |y| \geq 8 \} \\ \text{E. } \{(x,y) \mid |x| \geq 2 \text{ and } |y| \leq 8 \} \end{array}$ 

Tries 0/2

The domain of

$$f(x,y) = \frac{\sqrt{x-15}}{\ln(y-2) - 4}$$

is the set of all ordered pairs (x, y) of real numbers such that: NOTE: ONLY 2 ANSWER TRIES ON THIS PROBLEM.

A.  $\{(x, y) \mid x \ge 15, y > 2, y \ne e^4 + 2\}$ B.  $\{(x, y) \mid x \ge 15, y \ge 2\}$ C.  $\{(x, y) \mid x > 15, y > 2, y \ne e^4 + 2\}$ D.  $\{(x, y) \mid x \ge 15, y \ge 2, y \ne e^4 + 2\}$ E.  $\{(x, y) \mid x > 15, y \ge 2\}$ 

Describe the sketch of the level curves of the function for the given values of z:

$$f(x,y) = 8x^2y, \quad z = -15, 5.$$

(a) What type of function describes the level curves?

NOTE: ONLY 2 ANSWER TRIES ON Part (a).

- A. Rational Functions with y-axis symmetry
- B. Natural logarithm functions
- C. Rational Functions with x-axis symmetry
- D. Decreasing exponential functions
- E. Increasing exponential functions

Tries 0/3

(b) What functions y = f(x) do you get for these values of z?

(Enter the expression for the negative function in the first answer box, and the expression for the positive function in second answer box).

y = Tries 0/3

(c) What is the vertical asymptote for both functions?

x =

Tries 0/3

(d) What is the horizontal asymptote of both functions?

y =

 $Tries \ 0/3$ 

Describe the indicated level curves f(x, y) = C.

 $f(x,y) = \ln(x^2 + y^2); \quad C = 9, \ C = \ln 9.$ 

## NOTE: ONLY 2 ANSWER TRIES ON THIS PROBLEM.

- A. Ellipses with foci at  $(\pm 9, \ln 9)$
- B. Circles with centers at  $(9, \ln 9)$
- C. Ellipses with foci at  $(9, \pm \ln 9)$
- D. Circles with centers at (0,0)
- E. Parabolas with vertices at  $(9, \ln 9)$
- F. Parabolas with vertices at (0,0)

 $Tries \ 0/2$ 

The domain of the function

$$f(x,y) = \frac{\ln(9 - x - y)\sqrt{x + y - 1}}{\sqrt[4]{x + y - 7}}$$

is the set of all ordered pairs (x, y) of real numbers such that: NOTE: ONLY 2 ANSWER TRIES ON THIS PROBLEM.

A.  $\{(x, y) \mid 7 \le x + y < 9\}$ B.  $\{(x, y) \mid 1 < x + y < 7, \}$ C.  $\{(x, y) \mid 1 < x + y < 9\}$ D.  $\{(x, y) \mid 7 < x + y < 9\}$ E.  $\{(x, y) \mid 7 < x + y \le 9\}$ 

 $Tries \ 0/2$ 

If

 $f(x,y) = 16\ln(18(x-3)^2 + 18(y+3)^2),$ 

then the level curves of f are in the shape of NOTE: ONLY 2 ANSWER TRIES ON THIS PROBLEM.

- A. Parabolas
- B. Lines
- C. Exponential Curves
- D. Circles
- E. Logarithmic Curves

 $Tries \ 0/2$ 

Sketch the graph of the level curves of the function for the given values of z:

$$f(x,y) = 3e^{-x} - y, \quad z = -8, \ 10.$$

(a) What type of functions are the level curves? NOTE: ONLY 2 ANSWER TRIES ON THIS PROBLEM.

- A. Rational Functions with symmetry about the origin
- B. Natural logarithm functions
- C. Rational Functions with x-axis symmetry
- D. Decreasing exponential functions
- E. Increasing exponential functions

(b) For what values of y do the level curves have a y-intercept for these values of z? (Put the smaller y-value first.)

 $Tries \ 0/3$ 

(c) What are the y values of the asymptotes of the level curves for these values of z? (Put the smaller y-value first.)

\_\_\_\_\_\_ Tries 0/3

Describe the level curve f(x, y) = C for

C = 10 and  $f(x, y) = \sqrt{10(x+6)^2 + 10(y+9)^2}$ .

Circle with radius		and center	
$(x,y) = ( \_$	,		)
Tries $0/3$			

Find  $f_x$  and  $f_y$  where

$$f(x,y) = \sqrt{1 - 7x^2 - 8y^2}$$



Find  $f_x$  and  $f_y$  where

.

$$f(x,y) = 9x\tan(9y)$$

$$f_x = \boxed{\qquad}$$
$$Tries \ 0/3$$

(Round your answer to 3 decimal places.)  $f_x(0, 12) =$ *Tries* 0/3

$$f_y = \boxed{}$$
Tries 0/3

```
(Round your answer to 3 decimal places.)
f_y(0, 12) = 
Tries 0/3
```

Compute 
$$\frac{\partial z}{\partial x}$$
, where  $z = 26 \ln(8xy + 2)$ .

Find  $f_x$  and  $f_y$  where

$$f(x,y) = e^{0.05x^2 + 0.07y^2}$$

 $f_x = \boxed{}$ Tries 0/3

(Round your answer to 3 decimal places.)  $f_x(-8, 12) =$  *Tries* 0/3  $f_y =$ 

Tries 0/3

(Round your answer to 3 decimal places.)  $f_y(-8, 12) =$ *Tries* 0/3

A pharmaceutical company has two production plants that produce the same medicine. If x and y are the number of units produced in each plant respectively, the total revenue for the product is given by

$$R(x,y) = 126x + 184y - 5x^2 - 6xy - 3y^2$$

dollars. When x = 14, y = 13, find the marginal revenue (the rate of change of the revenue with respect to the number of units) for both plants.  $\partial R/\partial x =$ 

Tries 0/3

 $\partial R/\partial y =$ Tries 0/3

Let

$$f(x,y) = \frac{3x^2y^3}{y - 9x};$$

evaluate  $f_x(x, y)$  at (1, -1). (Round your answer to 4 decimal places)

Tries 0/3

Compute 
$$f_x(3, 17)$$
. If  $f(x, y) = \frac{(2x - 9y)^2}{\sqrt{y - 1}}$ .  
(Round your answer to 4 decimal places)

Tries 0/3

For the function

$$z = \frac{xy^2}{x^2y^3 + 8},$$

the first partial derivative  $\frac{\partial z}{\partial y}$  is

Tries 0/3

```
Find f_x and f_y where f(x, y) = 2e^{9(x+y)(xy)}.

f_x = 

Tries 0/3

f_y = 

Tries 0/3
```

One's Intelligence Quotient IQ is determined by their Mental Age M, and their chronological age C. It is calculated using the formula

$$IQ = (M/C) \cdot 100$$

Find the rates of change of IQ with respect to both an individual's mental and chronological ages for a person who has a mental age of 12 years and a chronological age of 26 years. Round your answer to the nearest 3 decimal places.

