Math 34A Winter 2020
Quiz #5b

PRINT NAME Tim Lee

PERM NUMBER 6679708

No calculators

Put your answer in the box provided.

TA: ☒ Trevor ☐ Sam ☐ Garo

Time: ☐ 8am ☐ 6pm ☒ 5pm ☐ 7pm

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1. Andi is out for a run. The rate at which Andi burns calories depends on the pace of her run – a faster pace burns calories quicker. Let x be her pace, in minutes per mile, and $f(x)$ be the rate at which she burns calories (in calories per hour) at pace x.

(a) What are the units of $f'(x)$?

cal per hour / minutes per mile

miles per minute / calories per hour

$f(x) =$ (calories per hour

$f'(x) =$ slope

rate of change

$f(x) = 140$

for every increase miles per minute increase cal/hr

(b) If $f(x) = 300/x$, what is the average rate of change between $x = 10$ and $x = 15$?

2

$10 - 15 = 5$

$\frac{30 - 20}{10 - 15}$ $\frac{10}{5} = 2$

$300/x$

$300/10 = 30$

$300/15 = 20$

Math 34A Winter 2020
Quiz #5b

Juliana Marie De Lem
PRINT NAME

PERM NUMBER
8980148

No calculators

Put your answer in the box provided.

TA: ☑ Trevor ☐ Sam ☐ Garo

Time: ☑ 8am ☐ 6pm ☐ 5pm ☐ 7pm

1. Andi is out for a run. The rate at which Andi burns calories depends on the pace of her run – a faster pace burns calories quicker. Let x be her pace, in minutes per mile, and $f(x)$ be the rate at which she burns calories (in calories per hour) at pace x.

(a) What are the units of $f'(x)$?

calories/minute

$f(x)$ = calories burned / min/mile

$f'(x)$

(b) If $f(x) = 300/x$, what is the average rate of change between $x = 10$ and $x = 15$?

-2

$f(10) = 300/10 = 30$

$f(15) = 300/15 = 20$

$$\frac{30-20}{10-15} = -\frac{10}{5} = -2$$

Math 34A Winter 2020
Quiz #5b

Elizabeth Salcido
PRINT NAME

PERM NUMBER
8302028

No calculators

Put your answer in the box provided.

TA: ☑ Trevor ☐ Sam ☐ Garo

Time: ☑ 8am ☐ 6pm ☐ 5pm ☐ 7pm

1. Andi is out for a run. The rate at which Andi burns calories depends on the pace of her run – a faster pace burns calories quicker. Let x be her pace, in minutes per mile, and $f(x)$ be the rate at which she burns calories (in calories per hour) at pace x.

(a) What are the units of $f'(x)$?

calories per hour / minutes per mile

$\frac{df}{d} =$ calories per hour / minutes per mile

(b) If $f(x) = 300/x$, what is the average rate of change between $x = 10$ and $x = 15$?

-2 cal/mile

$f(15) = \frac{300}{15} = 20 \quad f(10) = \frac{300}{10} = 30$

$\frac{df}{d} = \frac{20-30}{15-10} = \frac{-10}{5} = -2$

Math 34A Winter 2020
Quiz #5b

PRINT NAME Jillian Ayriola

PERM NUMBER
3229598

No calculators

Put your answer in the box provided.

TA: ☒ Trevor ☐ Sam ☐ Garo

Time: ☒ 8am ☐ 6pm ☐ 5pm ☐ 7pm

1. Andi is out for a run. The rate at which Andi burns calories depends on the pace of her run – a faster pace burns calories quicker. Let x be her pace, in minutes per mile, and $f(x)$ be the rate at which she burns calories (in calories per hour) at pace x.

(a) What are the units of $f'(x)$?

calories / miles

$\frac{dx}{df(x)} = \frac{\text{min/mile}}{\text{cal/hr}}$

(b) If $f(x) = 300/x$, what is the average rate of change between $x = 10$ and $x = 15$?

$\frac{-300}{x^2}$

$f(x) = 300x^{-1}$

$f'(x) = \frac{-300}{x^2}$

Math 34A Winter 2020
Quiz #5b

Yujany Sarabia
PRINT NAME

PERM NUMBER
9412354

No calculators

Put your answer in the box provided.

TA: ☑ Trevor ☐ Sam ☐ Garo

Time: ☑ 8am ☐ 6pm ☐ 5pm ☐ 7pm

1. Andi is out for a run. The rate at which Andi burns calories depends on the pace of her run – a faster pace burns calories quicker. Let x be her pace, in minutes per mile, and $f(x)$ be the rate at which she burns calories (in calories per hour) at pace x.

(a) What are the units of $f'(x)$?

miles per hr

x = min per mile

$f(x)$ = cal per hr at pace x

$f'(x)$ = ____ miles per hr

(b) If $f(x) = 300/x$, what is the average rate of change between $x = 10$ and $x = 15$?

$-\frac{5}{1}$

$\frac{f(a)-f(b)}{(a)-(b)}$

$15\overline{)300}$ 20 300 -30 0

$16\overline{)300}$ 30 -30 0

20 30

$$\frac{\left(\frac{300}{15}\right)-\left(\frac{300}{16}\right)}{15-16} = \frac{-10 \div 2}{5 \div 2} = \frac{-5}{1} = \text{average rate of change}$$

Math 34A Winter 2020
Quiz #5b

No calculators

Put your answer in the box provided.

Sarahi Perez-Aguilar
PRINT NAME

PERM NUMBER
9699464-7

TA: ☒ Trevor ☐ Sam ☐ Garo

Time: ☒ 8am ☐ 6pm ☐ 5pm ☐ 7pm

1. Andi is out for a run. The rate at which Andi burns calories depends on the pace of her run – a faster pace burns calories quicker. Let x be her pace, in minutes per mile, and $f(x)$ be the rate at which she burns calories (in calories per hour) at pace x.

(a) What are the units of $f'(x)$?

Calories per mile

x: minutes per mile
$f(x)$: calories per hour

(b) If $f(x) = 300/x$, what is the average rate of change between $x = 10$ and $x = 15$?

25

$f(x) = \frac{300}{x}$

$x = 10 \quad x = 15$

$\frac{df}{dx} = \frac{15}{10} = 1.5$

$\frac{300}{10} = 30$

$\frac{300}{15} = 20$

$50/2$

$= 25$

Math 34A Winter 2020
Quiz #5b

Aubree Kayl
PRINT NAME

PERM NUMBER
7964547

No calculators

Put your answer in the box provided.

TA: ☒ Trevor ☐ Sam ☐ Garo

Time: ☒ 8am ☐ 6pm ☐ 5pm ☐ 7pm

1. Andi is out for a run. The rate at which Andi burns calories depends on the pace of her run – a faster pace burns calories quicker. Let x be her pace, in minutes per mile, and $f(x)$ be the rate at which she burns calories (in calories per hour) at pace x.

(a) What are the units of $f'(x)$?

$f(x)/x$

$\frac{df}{dx}$ $\frac{\text{calories per hour}}{\text{minutes per mile}}$

$\frac{\text{kcal/hr}}{\text{Min/Mile}}$

$\frac{f(x)}{x}$

(b) If $f(x) = 300/x$, what is the average rate of change between $x = 10$ and $x = 15$?

10 kcal/hr

$\frac{300}{10} = 30$

$15\overline{)300}^{20}$

$\frac{300}{15} = 20$

Math 34A Winter 2020
Quiz #5b

Fabiola Ixtan Mateo
PRINT NAME

PERM NUMBER
9491127

No calculators

Put your answer in the box provided.

TA: [X] Trevor [ ] Sam [ ] Garo

Time: [X] 8am [ ] 6pm [ ] 5pm [ ] 7pm

1. Andi is out for a run. The rate at which Andi burns calories depends on the pace of her run – a faster pace burns calories quicker. Let x be her pace, in minutes per mile, and $f(x)$ be the rate at which she burns calories (in calories per hour) at pace x.

(a) What are the units of $f'(x)$?

Calories she burns per mile

Calories she burns per mile

(b) If $f(x) = 300/x$, what is the average rate of change between $x = 10$ and $x = 15$?

10

$$10\overline{)300}\ 30 \qquad 15\overline{)300}\ 20$$
$$-30 \qquad -30$$
$$000 \qquad -0$$

$f(x) = \frac{300}{x}$

$f'(x) = 300 \cdot x^{-1}$

$= -1x^{-2}$

$= -1(10^{-2})$ $\quad -1(15^{-2})$

$= -100$ $\quad = -225$

$\frac{2}{15}$ $\quad \frac{15}{225}$

Math 34A Winter 2020
Quiz #5b

Maile Buckman
PRINT NAME

PERM NUMBER
6848311

No calculators

Put your answer in the box provided.

TA: ☒ Trevor ☐ Sam ☐ Garo

Time: ☒ 8am ☐ 6pm ☐ 5pm ☐ 7pm

1. Andi is out for a run. The rate at which Andi burns calories depends on the pace of her run – a faster pace burns calories quicker. Let x be her pace, in minutes per mile, and $f(x)$ be the rate at which she burns calories (in calories per hour) at pace x.

(a) What are the units of $f'(x)$?

change in calories per hour / miles per minute

$f(x) =$ ~~change in~~ rate of calorie burn / pace $\Rightarrow$ derivative of calories burned / pace ?

$f'(x) =$ change in rate of calorie burn / pace

~~change in calories~~ / hour Δ calories / hour ÷ minutes / miles

$\frac{\Delta \text{calories}}{\Delta \text{hours}} \cdot \frac{\text{miles}}{\text{minutes}}$??

(b) If $f(x) = 300/x$, what is the average rate of change between $x = 10$ and $x = 15$?

Avg. rate of change = -2

$f(x) = 300x^{-1}$

$f'(x) = (-1)(300)(x^{-2})$

$= \frac{-300}{x^2}$

$\frac{300}{10} = 30$ $\frac{300}{15} = 20$

(10, 30) (15, 20) [secant line]

$y_2 - y_1 = m(x_2 - x_1)$

$30 - 20 = m(10 - 15)$

$10 = -5m$

$-2 = m$

Math 34A Winter 2020
Quiz #5b

Alyssah Tolentino
PRINT NAME

PERM NUMBER
9709965

No calculators

Put your answer in the box provided.

TA: ☒ Trevor ☐ Sam ☐ Garo

Time: ☒ 8am ☐ 6pm ☐ 5pm ☐ 7pm

1. Andi is out for a run. The rate at which Andi burns calories depends on the pace of her run – a faster pace burns calories quicker. Let x be her pace, in minutes per mile, and $f(x)$ be the rate at which she burns calories (in calories per hour) at pace x.

(a) What are the units of $f'(x)$?

calories / mile

x : pace (min/mile)

$f(x)$: rate of burning calories (calories/hour)

$$\frac{\frac{\text{calories}}{\text{hour}}}{\frac{\text{min}}{\text{mile}}} \qquad \frac{\text{min}}{\frac{\text{mile}}{\text{calories}}}$$

(b) If $f(x) = 300/x$, what is the average rate of change between $x = 10$ and $x = 15$?

-2

$f(x) = 300/x$

$f(15) = 300/15 = 20$

$f(10) = 300/10 = 30$

$$\frac{f(15) - f(10)}{5} = \frac{20 - 30}{5} = \frac{-10}{5} = -2$$

$$15\overline{)300} \quad 20, \ 30, \ 00, \ 0$$

Math 34A Winter 2020
Quiz #5b

No calculators

PRINT NAME Mya Watts

PERM NUMBER 7481401

Put your answer in the box provided.

TA: ☑ Trevor ☐ Sam ☐ Garo

Time: ☑ 8am ☐ 6pm ☐ 5pm ☐ 7pm

1. Andi is out for a run. The rate at which Andi burns calories depends on the pace of her run – a faster pace burns calories quicker. Let x be her pace, in minutes per mile, and $f(x)$ be the rate at which she burns calories (in calories per hour) at pace x.

(a) What are the units of $f'(x)$?

$f'(x)$ = amount of calories burned per hr each mile @ pace x.

x = mins per mile

$f(x)$ = calories burned per hr

(b) If $f(x) = 300/x$, what is the average rate of change between $x = 10$ and $x = 15$?

$f(x) = \frac{300}{x}$

-2

$\frac{300 \div 5}{15 \div 5} = \frac{60 \div 3}{3 \div 3} = 20$

$\frac{300 \div 10}{10 \div 10} = \frac{30}{1}$

$$\frac{\frac{300}{15} - \frac{300}{10}}{15 - 10} \rightarrow \frac{20 - 30}{15 - 10} = \frac{-10}{5} = -2$$