

Unit 4

L9 Rational function

Savannah wants to repaint the offices at work. The job requires 40 hours of work for one employee. In this situation, consider the function f which associates the number x of employees hired for the job with the time y that it takes to complete the job.

a)

# employees x	Duration (in hours) y
1	
2	
4	
5	
8	
10	
20	
40	

b) as x increases the y decreases,

c)
$$\frac{10-20}{4-2} = -5; \frac{8-10}{5-4} = -2$$

so **R.O.C is not constant so it is not a line**

d) The **product** of x and y is **constant** (always 40).

e) The rule is $y = \frac{40}{x}$ or $f(x) = \frac{40}{x}$

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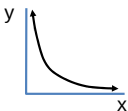
f)

# employees x	Duration (in hours) y
1	40
2	20
4	10
5	8
8	5
10	4
20	2
40	1

2

L9 Rational Function

- Variables x and y are **inversely proportional**
That is as x increases y decreases.
- The rate of change is **not constant**.
- The product of each pair x and y is **constant**.
- The rule is: $y = \frac{k}{x}$ because $xy = k$
- The **graph** looks like



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x	y
2	6
4	12
5	15

x	y
2	14
4	8
5	5

x	y
2	50
4	25
5	20

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Practice:
4.9 # 1-4



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