

7. Medicine taken by a patient breaks down in the patient's blood stream and dissipates out of the patient's system. Suppose a dose of 60 milligrams of anti-parasite medicine is given to a dog and the medicine breaks down such that 20% of the medicine becomes ineffective every hour. How much of the 60 milligram dose is still active in the dog's bloodstream after 3 hours, after 4.25 hours, after  $n$  hours?

a. Use a table, a graph, and an equation to model this situation.

Ratio:

$$\frac{48}{60} = .8$$



$$100\% - 20\%$$

Hours	Drug (mg)
0	60
1	48
2	38.4
3	30.72
4	24.576

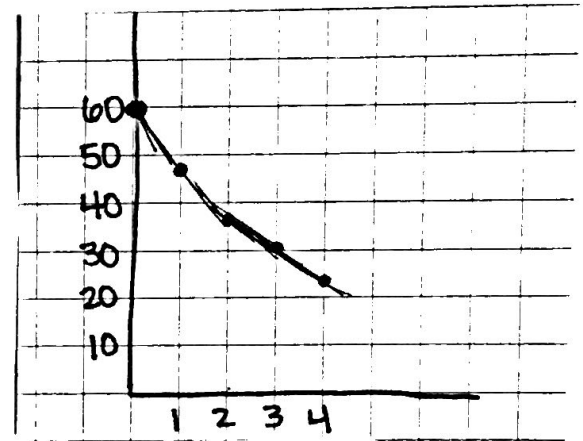
Handwritten calculations next to the table:  
 $60 \times .20 = 12$   
 $48 \times .2 = 9.6$

Arrows indicate the decrease in drug amount from one hour to the next: -12 from 0 to 1, and -9.6 from 1 to 2.

b. Identify the domain of the function.

Rational #s

0 to infinity  $\infty$



c. Would it make sense to look for an amount of active medicine at 3.8 hours?

Why? Yes!

d. Would it make sense to look for when there is 35 milligrams of medicine?

Why? Yes!