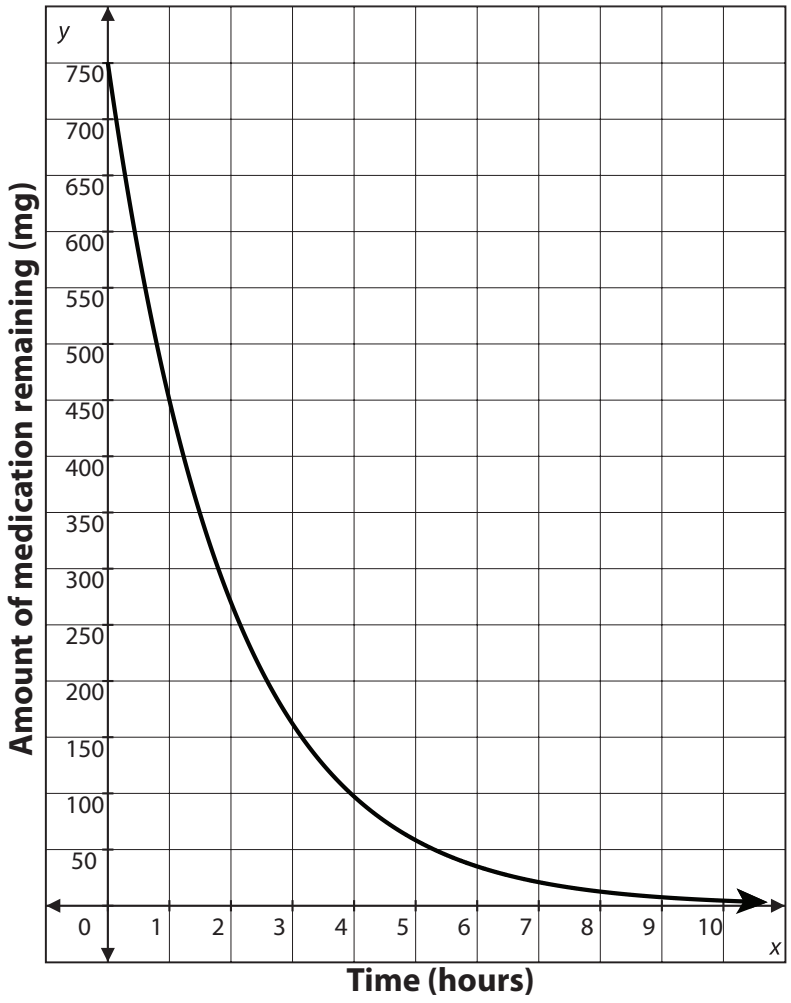
Problem-Based Task 3.3.3: Dwindling Concentrations

The liver and kidneys work to eliminate medications from the body exponentially. It is important for doctors to understand how much of any medication remains in the body after a certain period of time in order to prescribe the correct dosage. The graph below shows the amount in milligrams of a certain medication remaining in the body each hour after one dose.



What is the rate of change for the interval [1, 3]? How does this rate of change compare to the rate of change for the interval [3, 10]?

It is not uncommon for more than one dose of medication to be prescribed. Based on your findings, why would a patient be instructed to take a second dose of medication 12 hours after the initial dose?

Problem-Based Task 3.3.3: Dwindling Concentrations

Coaching

a. How much medication remains in the body after 1 hour?

b. How much medication remains in the body after 3 hours?

c. What is the rate of change for the interval [1, 3]?

d. How much medication remains in the body after 10 hours?

e. What is the rate of change for the interval [3, 10]?

f. How does the rate of change for the interval [1, 3] compare to the rate of change for the interval [3, 10]?

g. How much medication do you predict remains in the body after 12 hours?

h. Why would a patient be instructed to take a second dose of medication 12 hours after the initial dose?