

Reading Questions for Section 8.1 due June 12 (13 pts) Name _____

Read Example 1 of Section 8.1. Similar tables are below, corresponding to another therapeutic drug.

Drug level, $Q = d(t)$, (milligrams) as a function of time, t , (hours) since the medication was given.

t , time (hours)	0	1	2	3
Q , drug level (mg)	250	150	90	54

Heart rate, $r = c(Q)$, as a function of drug level, Q

Q , drug level (mg)	0	50	100	150	200	250
r , heart rate (beats per minute)	60	85	110	135	160	185

Complete the blanks:

- (2) 1. At the time $t = 0$, since the drug level is $Q =$ _____ mg, the patient's heart rate will be $r =$ _____.
- (2) 2. At the time $t = 1$, since the drug level is $Q =$ _____ mg, the patient's heart rate will be $r =$ _____.
- (1) 3. The heart rate, r , is a function of time, t , in hours since the last dose was given. Suppose $r = h(t)$. Which is true?
 $h = r(Q(t))$
 $h = Q(r(t))$
 $h = d(c(t))$
 $h = c(d(t))$
- (1) 4. It can be shown that when the drug level is $Q = 90$ mg, the patient's heart rate will be $r = 105$; thus we have $r = c(90) = 105$. What does this tell you about the value of $h(2)$? $h(2) =$ _____.
- (1) 5. Circle **ALL** correct answers.
 d is linear.
 d is exponential.
 c is linear.
 c is exponential.
- (2) 6. Construct a formula for $Q = d(t)$. **SHOW WORK.**
 Use the table feature of a graphing calculator to check that your formula match the table above.

$$Q = d(t) = \underline{\hspace{2cm}}$$

- (2) 7. Construct a formula for $r = c(Q)$. **SHOW WORK.**
 Use the table feature of a graphing calculator to check that your formula match the table above.

$$r = c(Q) = \underline{\hspace{2cm}}$$

- (2) 8. Use your formula in Question 8 to find $c(54)$. $c(54) =$ _____
 What does this tell you about $h(3)$? $h(3) =$ _____

Use your answers to the above questions to complete the table.

Heart rate, $r = h(t)$, as a function of time, t , since the medication was given

t , time (hours)	0	1	2	3
r , heart rate (beats per minute)				

BONUS (+3): Construct a formula for $r = h(t)$. $r = h(t) = \underline{\hspace{2cm}}$

Use the table feature of a graphing calculator to check that your formula match the table above.