Math 111 winter 2012 nichifor

Worksheet 4

1.5 + 6 = (7.5/10)

Math 111
Section BC
Due 1/19/12
TA: Light

(1)

t	35	40	45	50
D	25.1	26.7	29.3	33.3
ΔD	1.6	2.6	4	
$\frac{\Delta D}{\Delta t}$	0.32	.52	.8	

(2)

q	1	2	3	4	5	6
TR	15	28	39	48	55	60
ΔTR	13	11	9	7	5	
$\frac{\Delta TR}{\Delta q}$	13	11	9	7	5	

(3) MR at $q = 4$

(4) Overall speeds for
$t = 5 \rightarrow 8.1/5 =$ 1.62 mpm
$t = 10 \rightarrow 14.1/10 =$ 1.41 mpm
$t = 15 \rightarrow 18.1/15 =$ 1.21 mpm

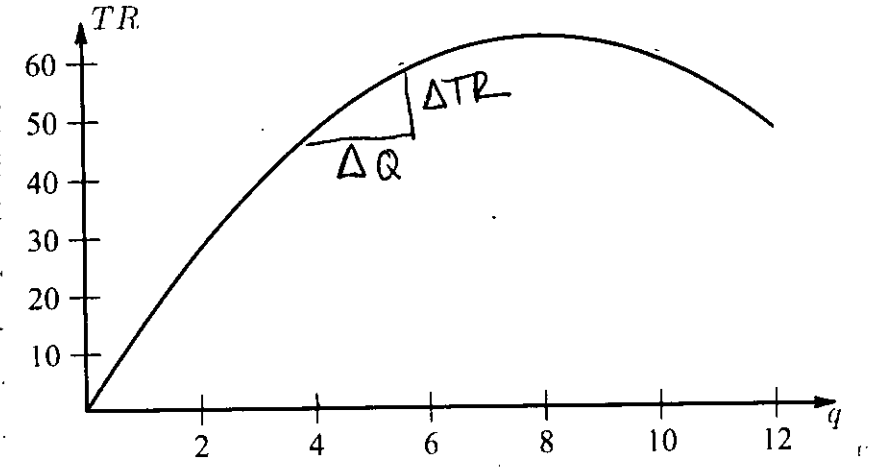
(5)

q	1	2	3	4	5	6	7	8	9	10	11	12
TR	15	28	39	48	55	60	63	64	63	60	55	48
MR	13	11	9	7	5	3	1	−1	−3	−5	−7	−9
AR	15	14	13	12	11	10	9	8	7	6	5	4

(6) AR = P

$AR = \frac{TR}{q}$ and $TR = (P \cdot q)$ $\Rightarrow AR = \frac{P \cdot q}{q} \Rightarrow AR = P$

(7) AR = TR/q or AR = P, TR = Pq, MR = ΔTR



M = MR

MR = marginal Revenue = $\Delta TR = \frac{\Delta TR}{\Delta q}$

on the graph MR is the slope of a secant line through the graph of TR

AR = Average revenue = $\frac{TR}{q}$ = Price

on the graph AR is the total revenue value (y) divided by the q value (x)

(8)

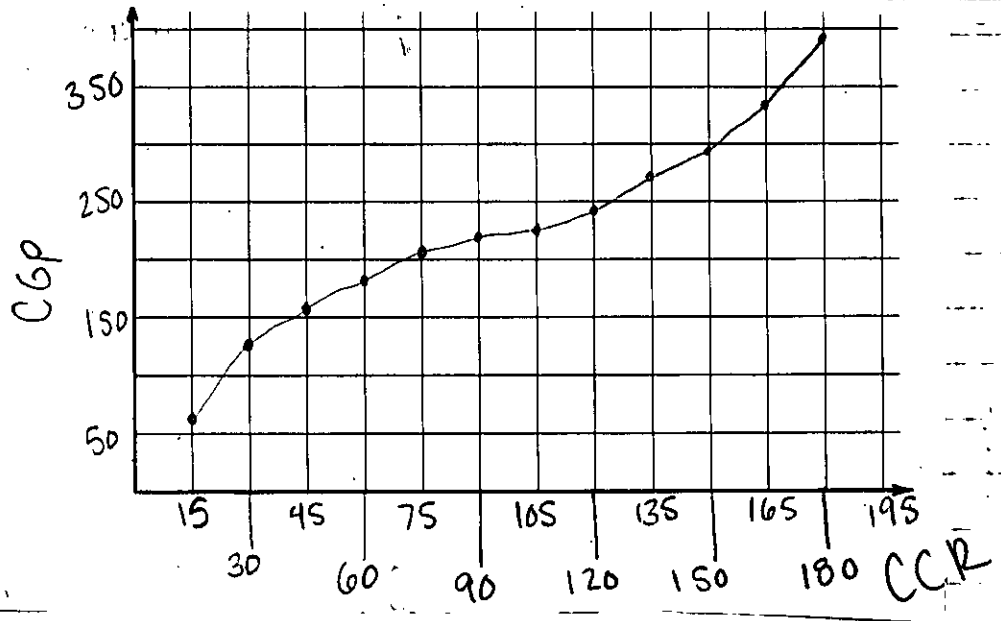
Course	Credits	Grade	Grade Points
Math 111	5	3.7	18.5
Psych 101	5	3.3	16.5
Engl 111	5	2.6	13
Music 116	2	4.0	8

(9) QGP = 56 | QCr = 17 | QGPA = 3.29 = 56/17

(10) QGPA = QGP/Qcr
CGPA = CGP/CCr

C Cr	15	30	45	60	75	90	105	120	135	150	165	180
QGP	60.0	52.5	39.0	26.5	21	16.1	15	16.1	21.0	28.5	39.0	52.2
QGPA	4.0	3.5	2.6	1.9	1.4	1.1	1.0	1.1	1.4	1.9	2.6	3.5
CGP	60.0	112.5	151.5	180	201	217.5	232.1	249.0	270	298.5	337.5	390.0
CGPA	4.0	3.75	3.37	3	2.68	2.42	2.21	2.075	2.0	1.99	2.08	2.17

(11)



(12) By creating a line from (0,0) to x=60. This is a diagonal & a secant line

(13) Similar to instantenous speed. Create a line between $x = 45$ and $x = 60$. (15 credits: 4 quarters = 60) and compute slope. This is a secant line. Does not go to (0,0) therefore is not a diagonal line.

(14) NO. If a point (QGPA) is above the average (previous CGPA) it will bring the average (CGPA) up. On the graph: the instantenous slopes (QGPA) always are positive. ○

NOT QUITE, LOOK @ FROM 105 → 150 cr.

(15)

a. (7, 2250) = 321.43 cars/hr

b. from 7-8

c. $t = 5$ 1000 at $t = 0$ + 2000 entered − 1000 exited = 2000 cars
$t = 10$ 1000 at $t = 0$ + 3400 exited + 2600 entered = ~~200 cars~~

d. (6, 1400) (3, 400) → $\frac{1400 - 400}{6 - 3}$ = 333.33 cars/hr

e. greatest = $t = 4$ = 1000 at $t = 0$ + 1750 in − 700 out = 2050 cars
least = $t = 10$ = 1000 at $t = 0$ + 2700 in − 3400 out = 300 cars.
↳ Biggest gaps between in and out

(16)

a. $20 + 18.61 + 17.22 + 15.83 + 14.44 + 13.06 = 99.16 dollars

b. ($20 + 18.61 + 17.21) / 3 = 18.61 dollars

c. $\Delta TR = MR$ from Q0-8
$\Delta TC = MC$
$P = TR - TC$

Q	0	1	2	3
TR	0	20	38.61	75.83
TC	0	10	17.81	51.77

Worksheet 5

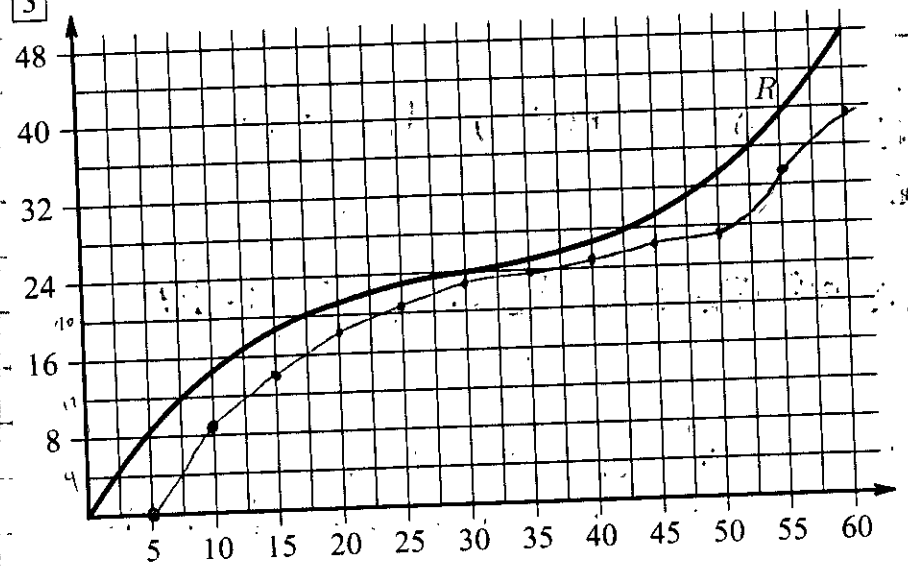
(1) The purple car is 8.5m from the starting line at t = 10
The purple car is 14.6m from the starting line (SL) at t = 15.

Time	5	10	15	20	25	30	35	40	45	50	55	60
Red	8.5	14.6	18.7	21.2	23.0	24.0	25.1	26.7	29.3	33.3	39.4	48.0
Purple	0	8.5	14.6	18.7	21.2	23	24	25.1	26.7	29.3	33.3	39.4
$D(t)$	8.5	6.1	4.1	2.5	1.8	1	1.1	1.6	2.6	4	6.1	8.6

(2)
a. Purple would be 3 boxs behind
b. purple would be 1 box ahead

(3)
a. look at graph (LIR)
b. it is the same. Just a horizontal shift to the right
c. it would be the same except shifted to the right 10 points
c. it would be above Red's line

3



4 C

5 at t = 30

6

a. No not always the same distance between cars

b. purple is getting closer from t=0 - t=30. It gets further behind from t=30 - t=60

7

a. The red car travels 18.7 miles in 15 min

b. R(25) = 23

8

a. The total revenue for 2 reams is 28 dollars

b. f(4) = 48

(9)

a. Between $t = 30$ and $t = 40$ the red car traveled 2.4 miles - False

b. The Red car traveled more miles at $t = 30$ than at $t = 25$ - True

c. The Red car traveled less miles from $t = 25$ to $t = 30$ than it did between $t = 15$ to $t = 20$ - False

d. The Red car traveled 2 miles from $t = 45$ to $t = 50$ - false

e. The Red car traveled $(1.06 \cdot 20)$ miles in 20 min - true

(10) a. $R(40) - R(25) = 3.7$ True

b. $R(20) > R(15)$ True

c. $R(45) - R(35) < R(60) - R(50)$ true

d. $R(30) - R(20) = 4.3$ false

e. $\frac{R(30)}{30} = .8 mpm$ true

(11) look at table

(12) $D(20) = R(20) - R(15)$

(13) $0 = R(20) - R(15)$: at time 20 the Distance between the cars should be 0. Therefore the equation equals zero

(14)

a there are more cars in the lot at $t=9$ than at $t=6$
false

b $C(7.6) =$ 1000 cars at $c(0)$ + 2400 cars in − 2400 cars out = 1000 cars

(C) $t = 3$ (t = 0 → 10) − 9 → the slope becomes flatter.

(D) $C(6) =$ 1000 cars at $c(0)$ + 2,200 in − 700 out
2500 cars

(1.5)