

[EXAM III IN CLASS REVIEW]
(CH. 5)

[1] GIVEN THE FOLLOWING TABLES, FIND THE COMBINATIONS/ COMPOSITIONS BELOW.

x	1	2	4	5	7	9
$p(x)$	1	0	7	6	4	3

x	0	1	3	6	7	9
$h(x)$	7	9	6	5	4	1

- | | | |
|---------------|-----------------------|-------------------------------|
| a) $(p+h)(1)$ | c) $(\frac{h}{p})(9)$ | e) $(p \circ h \circ p)(1)$ |
| b) $(ph)(7)$ | d) $(p \circ h)(1)$ | f) $(p^{-1} \circ h^{-1})(6)$ |

[2] DETERMINE THE FINAL VALUE OF \$1750 INVESTED AT A 7.5% ANNUAL INTEREST RATE COMPOUNDED MONTHLY AFTER 4 YEARS (ROUND TO TWO DECIMAL PLACES).

[3] LET $f(x) = (x+4)^3 - 6$, FIND f^{-1} . VERIFY!

[4] SOLVE $3 \ln x = 8$

[5] SOLVE $2^{x-3} = 7^{4x}$

[6] WRITE AS A SINGLE LOGARITHM:

$$\frac{1}{5} \ln 2x + 2 \ln y - 4 \ln z$$

[7] FIND VALUES a & b SUCH THAT $f(x) = a + b \log x$ MODELS THE DATA BELOW:

x	0.1	1	10	100	1000
y	26	39	52	65	78

[8] SOLVE $\log_2(2x) = 4 - \log_2(x+2)$. CHECK FOR EXTRANEOUS SOLUTION.

[9] FIND DOMAIN OF $\ln(x^2 - 4x - 32)$

[10] \$1100 IS INVESTED AT 9% COMPOUNDED CONTINUOUSLY.
FIND THE # OF YEARS IT WILL TAKE THAT INVESTMENT
TO REACH \$2500.

[11] SOLVE $\log(x+1) + \log(x-1) = \log 3$ (CHECK FOR EXTRANEOUS SOL'S)

[12] FIND $\log_9 18 + \log_3 74$

[13] THE PERCENTAGE P OF RADIOACTIVE CARBON-14 REMAINING
IN A FOSSIL AFTER t YEARS IS GIVEN BY $P = 100\left(\frac{1}{2}\right)^{t/5700}$.
\$ A FOSSIL CONTAINS 37% OF THE CARBON-14 THAT THE
ORGANISM CONTAINED WHEN IT WAS ALIVE. ESTIMATE THE
AGE OF THE FOSSIL

[14] THE VOLTAGE IN A CIRCUIT CAN BE MODELED BY

$$V(t) = V_0 e^{kt}$$

WHERE t IS IN MILLISECONDS. IF VOLTAGE DECREASES
BY 87% IN 6 MS, FIND k .

[15] A SODA CAN AT 80°F IS PUT INTO A FRIDGE AT
 35°F . THE TEMPERATURE OF THE SODA AFTER t
MINUTES IS GIVEN BY $T(t) = 32 + 48(0.9)^t$. HOW LONG
UNTIL THE SODA REACHES 40°F ?

[16] SOLVE $e^{x-3} = 2^{3x}$

[17] THE CONCENTRATION OF BACTERIA IN A SAMPLE CAN BE MODELED BY

$$B(t) = B_0 e^{kt}$$

WH/ t IS IN HOURS & B IS THE CONCENTRATION IN BILLIONS OF BACTERIA PER LITER.

(a) IF THE CONCENTRATION INCREASES BY 20% IN 6 HOURS, FIND k .

(b) IF $B_0 = 1.2$, FIND B AFTER 8.3 HOURS

[18] HOW LONG WILL IT TAKE TO DOUBLE AN INVESTMENT IF IT IS INVESTED AT 5% COMPOUNDED QUARTERLY?

[19] THE CONCENTRATION OF A DRUG IN A PATIENT'S BLOODSTREAM AFTER t HOURS IS MODELED BY

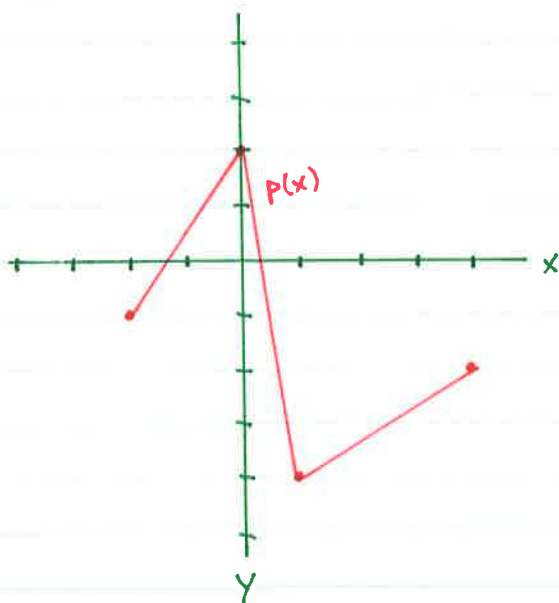
$$C(t) = 11(0.79)^t$$

WH/ C IS MEASURED IN MILLIGRAMS PER LITER (mg/L).

(a) WHAT IS THE INITIAL CONCENTRATION OF THE DRUG?

(b) HOW LONG DOES IT TAKE FOR THE CONCENTRATION TO DECREASE TO 50% OF IT'S INITIAL LEVEL?

[20] USE GRAPH BELOW



(a) PLOT $p(x+1) - 2$

(b) PLOT $-p(2x - 2)$

(c) PLOT $2p(\frac{1}{3}x) + 1$

(d) PLOT $-1.5p(-x)$