C12 - 7.0 - Exps Exp/Eq/Words/Graph Review

1) Simplify

a) $\dfrac{3^4 \times 3^{-3}}{9} =$

b) $\dfrac{4^2 \times 16^3}{128^2} =$

c) $\left(-\dfrac{8}{27}\right)^{\frac{2}{3}} =$

2) Simplify.

a) $(-2x^2 y^3)^3$

b) $\left(\dfrac{6x^2}{2x^1}\right)^3 =$

c) $\left(\dfrac{5x}{-2x^2}\right)^{-2} =$

d) $\dfrac{(2x^3 y^2)(6xy^4)}{(4x^3 y)} =$

e) $\dfrac{(8x^3 y^2)^2 (6xy^4)^{-2}}{(4x^3 y)} =$

f) $4^x (8^{-x})^2 =$

g) $\dfrac{\left(\frac{1}{5}\right)^{4x-1}}{125^{x-1}} =$

h) $\sqrt{\dfrac{3^{3x+4}}{3^{x+2}}} =$

i) $\dfrac{2^{7x+5} \times 8^{x+1}}{4^{x-2}} =$

3) Solve.

a) $2^x = 4^2$

b) $3^x = 27^2$

c) $2^x 2^1 = 2^5$

d) $4^{x+1} = 8^{2x-2}$

e) $2^{x^2 - x} = 1$

f) $5^{x^2 - 5} = 625$

g) $2^{x^2 - 3x} = \dfrac{1}{4}$

h) $\left(\dfrac{1}{3}\right)^{-x-1} = 27^{2x-8}$

i) $7 \times 3^{2x^2 + 5x} = \dfrac{7}{9}$

4) Solve

a) $x^{\frac{2}{5}} = 3$

b) $(x+1)^{\frac{2}{3}} = 16$

c) $4^{\sqrt{x+1}} = 2^{3x-5}$

5) Solve.

a) $2(3^x) + 3^x = 243$

b) $7^x + 7^{x+1} = 392$

c) $\left(\dfrac{3}{4}\right)^{3x-2} \times \left(\dfrac{4}{3}\right)^{1-x} = \dfrac{9}{16}$

d) $(2^x)^2 - 12(2^x) + 32 = 0$

e) $9^{2x} - 2(9^x) - 3 = 0$

f) $4^x - 4^{x-1} - 24 = 0$

g) $4^x + 4^{1-x} = 5$

h) $3^{2x+1} - 4(3^{x+1}) + 9 = 0$

i) $10^x - 4(5^x) - 5(2^x) + 20 = 0$

Simplify
Solve
Word Problems
Graph

6) In one calculation show how you increase $100 by 20% twice. Explain how that is related to the formula.

7) If you deposit $1000 in the bank at 10% a year. Create a table values for the first 8 years. Then use the formula to find out how much money is in the bank after 20 years and how long until we have $10000 in the bank.

8) A banana has a half-life of four days. If the banana starts at 100 grams. Create a table of values for the first six half-lives and draw graph. Then use the formula to find out how long until 3.125 grams and how much is left after 20 days.

9) If you deposit $5000 in the bank at 15% interest how much will you have after 10 years?

10) If you deposit $8000 in the bank at 4% interest, compounded quarterly, how much will you have after 7 years?

11) If a population starts at 2000 and triples every 6 hours, how large will the population grow in 24 hours?

12) If the population starts at 400 and grows continuously at a rate of 0.05, how large will it grow after 25 days?

13) How many times as intense is an earthquake of 7.2 than 5.8?

14) Find the present value of deposit worth $3000 in the bank at 12% interest how much will you have after 5 years?

15) Find the rate of a $2000 deposit worth $2200 after 4 years.
How long to triple your money at 5%

16) If you deposit $200 in the bank, how long will it take to grow to $12800 if it doubles every 2 years?

17) An earthquake in of Richter 7.2 Magnitude was 100 times as strong as a earthquake of what Richter Magnitude.

18) Light diminishes by 25% every 2 meters. Find the depth of 10% light.

19) Graph/State the Domain and Range and Asymptote and find any Intercepts.

a) $y = 2^x$

b) $y = \left(\dfrac{1}{2}\right)^x$

c) $y = -3^x$

d) $y = -3^{x+1} - 2$

e) $y = \left(\dfrac{1}{5}\right)^{-x-1}$

f) $y = 2(5^{-x+1}) + 3$

20) Find the Base "b" $y = b^x$.

a) $(-1,4)$

b) $\left(\dfrac{3}{2}, 27\right)$

21) Find "b" and "a"
$y = a(2)^{bx}$
$(0,4), (3,512)$

C12 - 7.0 - Geometric Sequences and Series Review

1) Find t_1 and r
a) $t_2 = 8, t_4 = 32$
b) $t_2 = 2, t_5 = -16$
c) $t_3 = -3, t_{12} = -59049$

2) in the sequence : $2, 4, 8, ...$
a) **Find the General Term**
b) **Find the 12th term. $t_{12} = ?$**
c) **Find out what term 128 is. $t_n = 128$.**
d) *What is the sum of the first six terms s_6? $s_6 = ?, n = 6$.*
e) *Find the number of terms if $s_n = 62$*

3) **Find "n" the number of terms and find the sum**
a) $3, 9, 27, ... 729$
b) $2, \dfrac{1}{2}, \dfrac{1}{8}, ... \dfrac{1}{512}$
c) $0.3, 0.03, 0.003, ... 0.00003$

4) Find n
$s_7 = 5465, r = 3, t_1 = 5.$

5) Given
$t_1 + t_2 = 48$
$t_3 + t_4 = 432$
r=3. 12,36,108,324
r=-3. -24,72,-216,648

6) Find x if Geometric

a) $\underline{x}$ $\underline{x+5}$ $\underline{x+9}$

   x=7. 9,15,25... r=5/3

b) $\underline{x+2}$ $\underline{2x+1}$ $\underline{4x-3}$

   x=-25. -25,-20,-16... r=0.8

7) **Find the sum of the infinite sequence?**
a) 4,2,1 ...
b) 2,6,18 ...
c) $t_1 = 9, r = \dfrac{1}{2}$

8) *Find a and r. (Hard)*
$s_3 = 19, s_\infty = 27$
9,6,4... r=2/3

9) If you make $1 in your first year at work and get paid double each year after.
a) How much will you make in your 10th year at work?
b) How much will you make total after 10 years?

10) A ball rolls off a building 100 m tall. Each time the ball bounces on the floor, it rises to 80% of the previous height.
a) How high does the ball bounce after the first bounce? The third bounce?
b) How high does the ball bounce after the nth bounce? (Find the general formula)
c) How high does the ball bounce after the 9th bounce. $(t_{10} = ?)$.
d) What is the total vertical distance the ball has travelled when it hits the ground for the 5th bounce?
e) If it bounces forever, what is the total distance?

11) Solve
a) $\displaystyle\sum_{k=2}^{6} 3(2)^{k-1} =$

b) $\displaystyle\sum_{k=1}^{\infty} 3\left(\dfrac{1}{2}\right)^{k-1} =$

12) *Find n*
$\displaystyle\sum_{k=1}^{9} 1(2)^{n-1} = 511$