**Unit 6 Math 20-1 Ch.1 Sequence and Series Final Exam Review**

**On a separate sheet of paper,** answer the following questions by showing ALL of your work*.*

1. The common difference in the arithmetic sequence 27, 23, 19, 15, ... is

2. What is the 23rd term of the sequence 32, 41, 50, ...?

3. What is the sum of the arithmetic series where a = -5, t6 = 10 and n = 14?

4. Alain is saving for college. He saves $1 the first month, $5 the second month, $9 the third month and so on. If he starts saving on Jan.1, 2012, how much money will he have saved on June 15, 2013?

5. A ball is dropped from a height of 3 m. After each bounce, it rises to 85% of its previous height. What is the total distance that the ball has travelled when it comes to a rest?

6. Laura inherits $25, 000 in April 2012. She invests the money at an interest rate of 2.7%/ year. What is the value of her investment in April 2025?

7. What is the 36th term in the sequence 4, -10, 25, ...?

8. What is the sum of the geometric series 250 + 50 + 10 + ... +  ?

9. Determine the number of terms in an arithmetic sequence with t12 = 73 and t17 = 38 when the final term is -46.

10. An arithmetic series has S15 = 690, d = 6 and t10 = 58 . Determine the first three terms of the series.

12. The sequence 6, 18, 54, …, 28,697,814has how many terms in it?

13. The terms of a geometric sequence are 4x + 1, x + 4 and 10-x. Determine the value of “x”.

14. What is the sum of the infinite geometric series 200 + 50 + 12.5 + ...

15. Bell ExpressVu charges $65/month for satellite TV service. Each year, the price increase by $7.

a) Write the general term of the sequence representing monthly cost of TV service.

b) Use your expression from part “a” to determine the monthly cost of TV service in year 12.

c) How many years will have passed if the monthly cost of TV service is $170?

16. An oil well produces 7500 barrels per month. If the number of barrels of oil decreases by 3% each month

a) Determine the general term of the geometric sequence.

b) After 4 months, how many barrels of oil does the well produce??

c) What is the total number of barrels of oil the well produces in 4 months?

17. A tree grows 1.2 m in the first year. Each year, the tree grows 75% as much as the previous year. What is the **total height** of the tree if in the last year it grows 0.02138154 m?

18. Is it better to be paid $5 per day for 100 days or be paid $0.05 the first day, $0.10 the second day, $0.20 the third day and so on for 100 days?

a) Show ALL of your work to support which method of pay is best

b) If your boss only had $100,000, how many days could they afford to pay you if you are paid $0.05 the first day, $0.10 the second day, $0.20 the third day and so on

**Ch.1 Sequence and Series Final Exam Review Answer Key**

1. -4
2. 230
3. 203
4. $630
5. 37 m
6. $35347.26
7. -3.388 x 1014
8. 
9. 29

10. 4, 10, 16

12. 15

13. x = 6

14. 266.66666

15. a) tn = 7n + 58

b) $142

c) 16 years

16. a) tn = 7500 (0.97)n-1

b) 6639 barrels

c) 28676 barrels

17. 4.736 m

18. a) First payment method: 5 \* 100 = $500

Second payment method: $6.33 8 x 1028

b) Could afford to pay you for 20 days