arithmetic geometric

an=arthmetic an=arcryn-1

 $\frac{1000/5iR}{Q_1 = Q_{n-1}}$ 



Date \_\_\_\_\_Algebra II

## Sequence/Series Review Sheet

Write an equation for each of the following sequences explicitly and recursively 1. 329.6, 376.8, 424, 471.2,... 2. 120, 192, 307.2, 491.52 (= 192 = 1.6 an= 120(1.6)m-1 d= 376.8-329.6=47.2  $G_1 = 120$   $G_1 = 120$   $G_2 = 120$   $G_3 = 120$   $G_4 = 120$   $G_4 = 120$ d= 424-376.8 = 47.7 91=3296 d=47.2 G1.6 4. 5205.20, 4208.15, 3211.1, 2214.05 Q=5205.20 3. 5400, 4050, 3037.5, 2278.125 924208.15-5205.20 = -947.05 Qn=9n-1-94705 explicit (= 4050 = 75 a.=5400(.75)1-1 d= 3211.1-4208.15 = -997.05  $f = \frac{3037.5}{4050} = .75$ secusive a,= 5400 9,2 5205.20 Peplicit [ an = 5205.20 + (n-1)(-997.05) an=150n=1 5. If  $a_n = 3a_{n-1} - 4$  and  $a_1 = 9$ , find  $a_5$ 92=3/01-4 a= 23 6. Find the 8<sup>th</sup> term for the sequence where  $a_n = 5a_{n-1} + 2$  where  $a_5 = 3$ an=5(n)+2/ a=5(3)+2 91=87/

- 7. The average depreciation rate of a new boat is approximately 8% per year. If a new boat is purchased at a price of \$75,000, which model is a recursive formula representing the value of the boat n years after it was purchased?
- 1)  $a_n = 75,000(0.08)^n$

3)  $a_n = 75,000(1.08)^n$ 

2)  $a_0 = 75,000$ 

 $a_0 = 75,000$ 

 $a_n = (0.92)^n$ 

 $\alpha_n = 0.92(\alpha_{n-1})$ 

1+,035=1,035

- 8. An initial investment of \$5000 in an account earns 3.5% annual interest. Which function correctly represents a recursive model of the investment after *n* years?
- 1)  $A = 5000(0.035)^{n}$

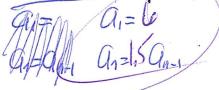
3)  $A = 5000(1.035)^{*}$ 

2)  $a_0 = 5000$ 

(4))  $a_0 = 5000$ 

 $\alpha_n = \alpha_{n-1}(0.035)$ 

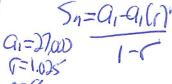
- $a_{y} = a_{y-1}(1.035)$
- 9. Write a recursive formula for the sequence 6, 9, 13.5, 20.25,...



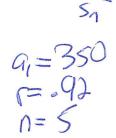
10. Write a recursive formula for the sequence 189, 63, 21, 7, .... (= 63 = 3

$$a_{n} = \frac{1}{3}a_{n-1}$$

11. Kina earns a \$27,000 salary for the first year of work at her job. She earns annual increases of 2.5%. What is the total amount, to the *nearest cent*, that Kina will earn for the first eight years at this job?



12. A fisherman harvests 350 kilograms of crab on Monday. From Monday to Friday, the fisherman harvests 8% less kilograms of crab per day. To the nearest tenth of a kilogram, what is the total amount of crab harvested between Monday and Friday?



$$S_{\xi} = 350 - 350(.92)^{\xi}$$
 $1 - .92$ 
 $S_{\xi} = 1401(\xi)$ 

G1.1

13. Kristin wants to increase her running endurance. According to experts, a gradual mileage increase of 10% per week can reduce the risk of injury. If Kristin runs 8 miles in week one, which expression can help her find the total number of miles she will have run over the course of her 6-week training program?

- $\sum 8(1.10)^{n-1}$ Summa tons
- 3)  $8-8(1.10)^6$

Sn=9,-9,(1)"

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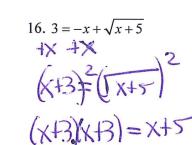
14. In his first year running track, Brendon earned 8 medals. He increases his amount of medals by 25% each year. Which of the following expressions can be used to determine how many total medals Brendon will have after four years of high school?

1)  $\frac{8-8(0.25)^4}{-25}$ 

2)  $\sum_{i=1}^{4} 8(0.25)^{n-1}$ 

Algebraically solve for all values of x

15. 
$$x = 1 + \sqrt{x+5}$$



X2+OXF9

M=nortgage payment

P= principal amount of loan (total cost - down payment)

(- interest rate (move deamed 2 places to the Left)

N=#of mentally payments (12(#of years))

17. Mr. and Mrs. Jenkins just closed on a new home whose purchase price was \$380,000. At the

17. Mr. and Mrs. Jenkins just closed on a new home whose purchase price was \$380,000. At the closing, they supplied a down payment of \$76,000. If on the day of the closing the monthly interest rate was .3125%, determine the Jenkins' monthly mortgage payment, to the *nearest cent*, if they were approved for a 30-year loan.

Use the formula  $M = P \cdot \frac{r(1+r)^n}{(1+r)^n-1}$  where M is the mortgage payment, P is the principal amount

of the loan, r is the monthly interest rate, and n is the number of monthly payments.

18. Monthly mortgage payments can be found using the formula below:

$$M = \frac{P\left(\frac{r}{12}\right)\left(1 + \frac{r}{12}\right)^n}{\left(1 + \frac{r}{12}\right)^n - 1}$$

M = monthly payment = M P = amount borrowed 120,000 r = annual interest rate = 048 n = number of monthly payments |S(12)| = 180

The Banks family would like to borrow \$120,000 to purchase a home. They qualified for an annual interest rate of 4.8%. If they plan to spend 15 years to repay the loan, what will be the monthly payment rounded to the *nearest* cent?

$$M = \frac{120,000(\frac{8048}{12})(1+\frac{048}{12})^{180}}{(1+\frac{048}{12})^{180}-1}$$

$$M = 936.50$$

19. Which expression is equivalent to 
$$2xy^2\sqrt[3]{x^2y}$$
?

$$2x^{\frac{5}{3}}y^{\frac{7}{3}} + 51512 - 3$$

2) 2xy

3) 
$$\frac{2}{2x^3}v$$

1) 
$$P = \sqrt[3]{210x^4y^7}$$

2) 
$$P = 70xy^2 \sqrt[3]{xy}$$

21. Which is the solution to:  $1 - 2(5)^{2x} = -5$ ?

$$1) \frac{\ln 6}{2 \ln 3}$$

3) 
$$\frac{2 \ln 4}{\ln 2}$$

$$2) \frac{2 \ln 5}{\ln 1}$$

$$\frac{\ln 3}{2 \ln 5} - 5 = -5$$

22. Which is the solution to:  $5(3)^{2x} = 30$ ?

1) 
$$\frac{\log 6}{3 \log 2}$$
 Joyle Si

$$3) \frac{2 \log 6}{\log 3}$$

$$2) \frac{\log 6}{2 \log 3}$$

$$20 = 30$$

Express in simplest form with a rational exponent:

23. 
$$\sqrt[5]{x^2} \cdot \sqrt[3]{x^3}$$

24.  $\sqrt[4]{a^7} \bullet \sqrt[3]{a^5}$ 

a4.a3

- Rachials are flectional

- Nigative exposino are traction