Section C Comprehensive Review

Directions: Show all work. Use exact values. Box or circle all answers.

1. Write an explicit formula for the geometric sequence $6, 18, 54, 162, \ldots$.

2. Write an explicit formula for the geometric sequence $80, 40, 20, 10, \ldots$.

3. Write an explicit formula for the geometric sequence $-5, 15, -45, 135, \ldots$.

4. Write an explicit formula for the geometric sequence $81, 54, 36, 24, \ldots$.

5. Convert the recursive formula to an explicit formula: $a_1 = 7, \quad a_n = 4(a_{n-1})$.

6. Convert the recursive formula to an explicit formula: $a_1 = 160, \quad a_n = \frac{1}{2}(a_{n-1})$.

7. Convert the recursive formula to an explicit formula: $a_1 = 5, \quad a_n = -2(a_{n-1})$.

8. Convert the recursive formula to an explicit formula: $a_1 = -27, \quad a_n = -\frac{1}{3}(a_{n-1})$.

9. Convert the explicit formula to a recursive formula. Include the first term: $a_n = 9(3)^{n-1}$.

10. Convert the explicit formula to a recursive formula. Include the first term: $a_n = 96(\frac{1}{2})^{n-1}$.

11. Convert the explicit formula to a recursive formula. Include the first term: $a_n = 4(-3)^{n-1}$.

12. Convert the explicit formula to a recursive formula. Include the first term: $a_n = -10(\frac{2}{5})^{n-1}$.

13. The table shows mass (in grams) of a sample for days 1 through 4.

Day	1	2	3	4
Mass (grams)	486	162	54	18

Find the common ratio, write an explicit formula, and find the value at day 6.

14. The table shows the number of people infected at the end of each week.

Week	1	2	3	4
People Infected	8	24	72	216

Find the common ratio, write an explicit formula, and find the value at week 5.

15. A geometric sequence has $a_2 = 12$ and $a_5 = 96$. Find the common ratio and write an explicit formula for the sequence.

16. A geometric sequence has $a_2 = 6$ and $a_5 = -48$. Find the common ratio and write an explicit formula for the sequence.

17. For $y = f(x) = (400)(1.08)^x$, identify the y-intercept and common ratio. At what percentage is the function growing or decaying? Is it growth or decay?

18. For $y = f(x) = (600)(0.7)^x$, identify the y-intercept and common ratio. At what percentage is the function growing or decaying? Is it growth or decay?

19. A population has 500 organisms when an observation begins and increases by 20% each year. Write an exponential equation to model the population at any given time. What is the population after 3 years?

20. A laptop is worth $\$2400$ when it is purchased and decreases by 25% each year. Write an exponential equation to model its value at any given time. What is its value after 2 years?

21. A medication contains 1000 mg when treatment starts and decreases by 20% each hour. Write an exponential equation to model the amount remaining at any given time. How many milligrams remain after 3 hours?

22. y-intercept = 5; common ratio = 3. Write an explicit equation.

23. y-intercept = -4; common ratio = $\frac{1}{2}$. Write an explicit equation.

24. y-intercept = 12; common ratio = 4. Write an explicit equation.

25. y-intercept = 20; common ratio = $\frac{3}{4}$. Write an explicit equation.

26. y-intercept = -7; common ratio = 5. Write an explicit equation.

27. Point: $(1, 12)$; common ratio = 3. Write two different explicit equations that represent the function.

28. Point: $(2, 20)$; common ratio = 2. Write three different explicit equations that represent the function.

29. Point: $(3, 54)$; common ratio = 3. Write three different explicit equations that represent the function.

30. Point: $(2, \frac{9}{4})$; common ratio = $\frac{1}{2}$. Write three different explicit equations that represent the function.

31. Point: $(4, 16)$; common ratio = $\frac{1}{2}$. Write two different explicit equations that represent the function.

32. Point: $(2, -18)$; common ratio = 3. Write three different explicit equations that represent the function.