Precalculus
10.3 Odd Answers

1. $a_n = -2n^2$ Arithmetic? $a_n - a_{n-1} = \left(-2n^2\right) - \left(-2n^2 + 4n - 2\right)$

     $a_{n-1} = -2(n-1)^2$ $= -2n^2 + 2n^2 - 4n + 2$

         $= -2\left(n^2 - 2n + 1\right)$ $= -4n + 2$

         $= -2n^2 + 4n - 2$ Not constant, so not arithmetic

               NEITHER   Geometric? $\dfrac{a_n}{a_{n-1}} = \dfrac{-2n^2}{-2(n-1)^2} = \dfrac{n^2}{(n-1)^2}$

                                      Not constant, so not geometric

3. $a_n = 3 - 5n$ Arithmetic? $a_n - a_{n-1} = (3 - 5n) - (8 - 5n)$

     $a_{n-1} = 3 - 5(n-1)$ $= 3 - 5n - 8 + 5n$

         $= 3 - 5n + 5$ $= -5$

         $= 8 - 5n$ Constant, so ARITHMETIC!

5. $a_n = 12\left(\dfrac{1}{4}\right)^{n-1}$; $a_5 = \dfrac{3}{64}$

7. $\dfrac{1}{64}$

9. 768

11. $a_n = -(-3)^{n-1}$

13. $\dfrac{349{,}524}{5}$ or 69,904.8

15. 7,324,218

17. 4.199947…

19. diverges

21. converges; 12

23. converges; $-\dfrac{20}{7}$

25. 1.8447×10^{19} grains