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Lesson 11.2

1. yes; $d = 3$ 2. no 3. yes; $d = 2.5$

4. no 5. yes; $d = \frac{3}{5}$ 6. yes; $d = -2.3$

7. $t_n = 25 - 9n$ 8. $t_n = 8n - 23$

9. $t_n = 3n + 10$ 10. $t_n = 12n - 37$

11. $t_n = 11n - 2$ 12. $t_n = 9.9 - 1.3n$

13. 50, 150, 250, 350 14. 7.5, 10, 12.5, 15

15. −20, −12, −4, 4 16. 25, 65, 105, 145

17. 8.5, 9, 9.5, 10 18. −15, −27, −39, −51

19. −5, 2, and 9 20. 52, 64, 76, and 88

21. 62 and 74 22. 10.5, 14, and 17.5

23. 34, 28, and 22 24. −2, 4, 10, and 16

Lesson 11.3

1. 350 2. $16\frac{1}{2}$ 3. −165 4. 2905

5. 711 6. 1482 7. 25,425 8. 360

9. 1300 10. 9555 11. 9555 12. 330

13. 990 14. 165 15. 239.25 16. −1914

17. $528\sqrt{5} \approx 1180.64$ 18. 84 19. −132

20. 590 21. 228 22. 795 23. −351

Lesson 11.4

1. no 2. yes; $r = 0.4$ 3. yes; $r = -\frac{3}{5}$

4. yes; $r = 1.5$ 5. yes; $r = \frac{2}{3}$ 6. no

7. 18, −36, 72, −144

8. −4, −10, −25, −62.5, −156.25

9. 10, 5, 2.5, 1.25 10. 0.625 or −0.625

11. $32\sqrt{2}$ or $-32\sqrt{2}$

12. $1640\frac{1}{4}$ or $-1640\frac{1}{4}$

13. $t_n = 250\left(\frac{2}{5}\right)^{n-1}$

14. $t_n = -30(-0.2)^{n-1}$

15. $t_n = 40(0.8)^{n-1}$

16. $t_n = 2\left(\frac{5}{2}\right)^{n-1}$ 17. $t_n = 80\left(\frac{1}{4}\right)^n$

18. $t_n = -\frac{1}{4}(-6)^n$

19. 35 and 175 20. −14 and −7

21. 48, 192, and 768 or −48, 192, and −768

22. 15, 18, and 21.6 or −15, 18, and −21.6

23. 60, 300, and 1500 or −63, 300, and −1500

24. 12, 36, 108, and 324

Lesson 11.5

1. 6,973,568,800 2. 86.4 3. −147

4. $\frac{5467}{3125} \approx 1.7$ 5. −1064.7

6. 6144 7. 1,572,864 8. 12,285

9. 3,145,725 10. 378 11. 1,708,554.00

12. 1.67 13. 14,348,906

14. Show the statement is true for $n = 1$: $1^3 = 1$ and $\frac{1^2(1+1)^2}{4} = 1$. Assume that the statement is true for a natural number k. Then

$1^3 + 2^3 + 3^3 + \cdots + k^3 = \frac{k^2(k+1)^2}{4}$ and

$$1^3 + 2^3 + 3^3 + \cdots + k^3 + (k+1)^3 = \frac{k^2(k+1)^2}{4} + (k+1)^3 = \frac{k^2(k+1)^2 + 4(k+1)^3}{4} = \frac{(k+1)^2[k^2 + 4(k+1)]}{4} = \frac{(k+1)^2(k^2 + 4k + 4)}{4} = \frac{(k+1)^2(k+2)^2}{4} = \frac{(k+1)^2[(k+1)+1]^2}{4}.$$

Thus, the statement is true for $k + 1$.