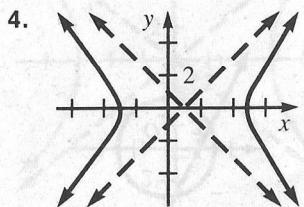
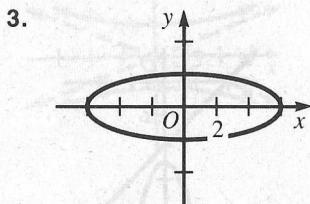
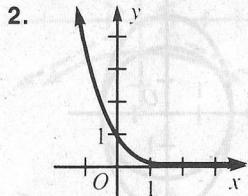
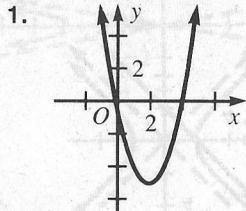


Exercises, page 163

1. $4 \log_2 M + 3 \log_2 N$
2. $3 \log_2 M + 3 \log_2 N$
3. $\log_2 M + \frac{1}{3} \log_2 N$
4. $\frac{3}{2} \log_2 M + \frac{1}{2} \log_2 N$
5. $5 \log_2 M - 6 \log_2 N$
6. $4 \log_2 N - 4 \log_2 M$
7. $\frac{1}{2} \log_2 M - \frac{1}{2} \log_2 N$
8. $\frac{1}{3} \log_2 M - \frac{4}{3} \log_2 N$

Exercises, page 166

9. a. $\frac{\log 30}{\log 34}$ b. 0.964
10. a. $\frac{\log 300}{\log 3.1}$ b. 5.04
11. a. $-\frac{\log 3}{\log 33}$ b. -0.314
12. a. $\frac{\log 34}{2 \log 3.09}$ b. 1.56

CHAPTER 11**Mixed Review Exercises, page 172****Exercises, page 174**

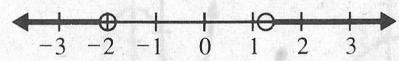
21. a. 1, 3 b. $\frac{1}{2}, 2, \frac{7}{2}$
22. a. $36\frac{2}{3}, 43\frac{1}{3}$ b. 35, 40, 45
23. a. $22\frac{1}{3}, 30\frac{2}{3}$
b. $20\frac{1}{4}, 26\frac{1}{2}, 32\frac{3}{4}$
24. a. $13\frac{1}{3}, 26\frac{2}{3}$ b. 10, 20, 30

Exercises, page 175

1. $t_n = 4(3)^{n-1}$
2. $t_n = 400\left(\frac{1}{4}\right)^{n-1}$
3. $t_n = (\sqrt{3})^{n-1}$
4. $t_n = 25\left(\frac{4}{5}\right)^{n-1}$
5. $t_n = 80\left(-\frac{3}{4}\right)^{n-1}$
6. $t_n = -3(-0.1)^{n-1}$

Mixed Review Exercises, page 176

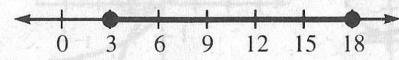
1. $\{x: x < -2 \text{ or } x > \frac{4}{3}\}$



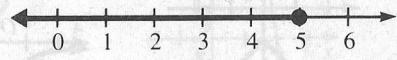
2. $\{x: -3 \leq x \leq 1\}$



3. $\{x: 3 \leq x \leq 18\}$



4. $\{x: x \leq 5\}$

**Exercises, page 178**

5–10. Answers may vary. Examples are given.

5. $\sum_{n=1}^{25} 4n$

6. $\sum_{n=1}^{37} (5n + 20)$

7. $\sum_{n=1}^{15} 2 \cdot (5^n)$

8. $\sum_{n=1}^8 (0.1)^{n-1}$

9. $\sum_{n=1}^{17} (11 - 3n)$

10. $\sum_{n=1}^8 \left(\frac{2}{3}\right)^n$

Exercises, page 182

13. 4, 6, 7, 7.5, 7.75; $S = 8$
14. 3, 3.3, 3.33, 3.333, 3.3333; $S = \frac{10}{3} = 3\frac{1}{3}$
15. $\frac{1}{2}, \frac{1}{4}, \frac{3}{8}, \frac{5}{16}, \frac{11}{32}; S = \frac{1}{3}$
16. 25, 30, 31, 31.2, 31.24; $S = 31.25$

Exercises, page 184

1. $x^4 + 4x^3y + 6x^2y^2 + 4xy^3 + y^4$
2. $x^5 + 5x^4y + 10x^3y^2 + 10x^2y^3 + 5xy^4 + y^5$
3. $x^3 - 3x^2y + 3xy^2 - y^3$
4. $x^5 + 10x^4 + 40x^3 + 80x^2 + 80x + 32$
5. $y^4 - 12y^3 + 54y^2 - 108y + 81$
6. $8a^3 + 12a^2 + 6a + 1$
7. $243a^5 + 810a^4 + 1080a^3 + 720a^2 + 240a + 32$
8. $x^{14} - 7x^{12} + 21x^{10} - 35x^8 + 35x^6 - 21x^4 + 7x^2 - 1$
9. $x^2 + 4x\sqrt{xy} + 6xy + 4y\sqrt{xy} + y^2$
10. $x^{16} - 8x^{14}y^3 + 28x^{12}y^6 - 56x^{10}y^9 + 70x^8y^{12} - 56x^6y^{15} + 28x^4y^{18} - 8x^2y^{21} + y^{24}$
11. $x^6 + 6\sqrt{2}x^5 + 30x^4 + 40\sqrt{2}x^3 + 60x^2 + 24\sqrt{2}x + 8$
12. $x^5 - 5x^3 + 10x - 10x^{-1} + 5x^{-3} - x^{-5}$

Exercises, page 186

17. a. $a^{11} + 11a^{10}b + 55a^9b^2 - 165a^8b^3$
- b. $a^{11} - 11a^{10}b + 55a^9b^2 - 165a^8b^3$
18. a. $x^{17} + 17x^{16}y + 136x^{15}y^2 + 680x^{14}y^3$
- b. $x^{17} - 17x^{16}y + 136x^{15}y^2 - 680x^{14}y^3$
19. a. $c^{14} + 14c^{13}d + 91c^{12}d^2 + 364c^{11}d^3$
- b. $c^{14} - 14c^{13}d^2 + 91c^{12}d^4 - 364c^{11}d^6$
20. a. $r^{20} + 20r^{19}s + 190r^{18}s^2 + 1140r^{17}s^3$
- b. $r^{20} - 60r^{19}s + 1710r^{18}s^2 - 30,780r^{17}s^3$