Math 150 Week-in-Review 1 Answer Key

1. (a) Natural Numbers: $1, \sqrt{81}$
   (b) Integers: $-7, 1, \sqrt{81}$
   (c) Rational Numbers: $-7, 0.46, 0.78\overline{94}, \sqrt{81}, 1, \frac{12}{7}$
   (d) Irrational Numbers: $\pi^2, \sqrt[4]{8}$
2. $\frac{3564}{9990} = \frac{66}{185}$
3. (a) $(-12, 4]$
   (b) $[-5, 2)$
   (c) $(\frac{4}{15}, 1]$
4. 9
5. $\frac{47}{126}$
6. (a) $\dfrac{81y^{46}}{32x^{21}}$
   (b) $\dfrac{81 \cdot 2^{4/3} x^{22/15} y^{112/15}}{4}$
   (c) $x^{29/12}$
7. (a) $(2x^7 + 3x^5)\sqrt[3]{3}$
   (b) $3|a^3|b^2\sqrt{2a}$
8. (a) 1.63×10^{10}
   (b) 4.0056×10^{-5}
9. (a) $x^5y^3 - 3x^7y - x^3y^3 + 3x^5y + x^2y^5 - 3x^4y^3$
   (b) $8x^3 + 49x^2 + 114x - 14$
10. (a) $(3x - 5)(3x + 5)(x - 2)(x + 2)$
    (b) $(8x + 1)^2$
    (c) $2x^{-2/5}(x - 4)(x^2 + 4x + 16)$
11. (a) $(-\infty, \infty)$
    (b) $(-\infty, -5) \cup (-5, 5) \cup (5, \infty)$
    (c) $[4, 5) \cup (5, \infty)$
    (d) $(-\infty, -\frac{7}{2}) \cup (-\frac{7}{2}, \infty)$
    (e) $(-6, \infty)$
12. (a) $\dfrac{(3x + 2)(5x - 1)}{(x + 3)^2}$

(b) $\dfrac{7x-4}{(x-4)^2(x+4)}$

13. (a) $\dfrac{x(2y+x)}{y(2x+y)}$

    (b) $\dfrac{2+(x-2)^{17/12}}{(x-2)^2}$

14. (a) $\frac{7\sqrt[7]{x^4}}{x}$

    (b) $\frac{\sqrt{x(x+h)}+x}{h}$

15. $h = \frac{S-2lw}{2(w+l)}$

16. (a) $x = -6, 7$

    (b) $x = -3 \pm \frac{\sqrt{35}}{2}$

    (c) $x = 8$

    (d) $x = 2, 3$

    (e) $x = -1 \pm \sqrt{6}$

    (f) $x = -1, 2$

    (g) $x = 16$

17. (a) No real solutions

    (b) 2 real solutions

18. $h = 50$ (This is found by setting the discriminant of the equation equal to 0.)