ANSWERS 5.6

1. {2}
2. {36}
3. {5}
4. $\left\{\frac{100}{3}\right\}$
5. $\left\{\frac{3}{2}\right\}$
6. $\left\{\frac{1}{3}\right\}$
7. {6}
8. {4}
9. {3}
10. {7}
11. $\left\{\frac{3}{2}\right\}$
12. {42}
13. {3}
14. $\left\{\frac{9}{2}\right\}$

8.4 Day 1 Assignment Answers

15. $\left\{-\frac{1}{2}\right\}$
16. $\left\{\frac{5^{20}+12}{8}\right\}$
17. {2}
18. {2}
19. {2.63093}
20. {1.54795}
21. {1.62296}
22. {0.85809}
23. {2.57223}
24. {2.57909}
25. {−0.65629}
26. {−0.52130}
27. {1.50000}
28. {−0.13117}
29. {−7.71770}
30. {−11.45020}
31. {0.70951}
32. {−0.47667}
33. $a=\frac{9}{4}$; $b=\frac{27}{8}$

If $\frac{a}{b}=\frac{2}{3}$, then $3a=2b$.

Thus $a=\frac{2}{3}b$ (1). But $\frac{\log a}{\log b}=\frac{2}{3}$. Thus $3\log a=2\log b$ or $\log a^3=\log b^2$. This implies $a^3=b^2$ (2). Substituting (1) into (2) and solving gives our answer. We must reject the solution $b=0$, since the logarithm of 0 is undefined.

ANSWERS 5.7

1.
(a) 42.86 g
(b) 194.49 days

2. 35.49 hours

3. $h=0.45648$
It will take 2.15 minutes.

4. $k=0.023912$
towards the end of October, 2027.

5. $k=0.021049$
in early April of 2011.

6. 4.75 months

7. $18679.19

8. $1158.21

9. 20.32 years

10. $13959.87

11. 7.05%

12. 22.52 years

13. 9.87 years

14. 1.49 months

15. to be discussed

16. to be discussed

17.
(a) $x=0.63093$ and $x=1.26186$
(b) $y=8$. As $x\to-\infty$, both 3^{2x} and $3^x\to 0$ since $2x$ and x become large negative exponents. Thus the value of the function is very close to 8.
(c) There is no vertical asymptote. The graph does, however, rise very sharply for positive values of x, but to have a vertical asymptote line, we would need a value of x that causes the denominator of the function to become 0. That isn't going to happen in this case.