35. x

36. $5x$

37. 4

38. 15

39. $2x$

40. $x + 1$

41. -3 and $\frac{1}{64}$ are in the wrong position; $\log_4 \frac{1}{64} = -3$

42. 16 should also be raised to the power of x;

$$\log_4 64^x = \log_4(16^x \cdot 4^x) = \log_4((4^2)^x \cdot 4^x) = \log_4(4^{2x} \cdot 4^x)$$
$$= \log_4(4^{2x+x}) = \log_4(4^{3x}) = 3x$$

43. $y = \log_{0.3} x$

44. $y = \log_{11} x$

45. $y = 2^x$

46. $y = \left(\frac{1}{5}\right)^x$

47. $y = e^x + 1$

48. $y = \frac{1}{2}e^x$

49. $y = \frac{1}{3}\ln x$

50. $y = \ln x + 4$

51. $y = \log_5(x + 9)$

52. $y = 10^{x-13}$

53. **a.** about 283 mi/h

b. $d = 10^{s-65.93}$; The inverse gives the distance a tornado will travel given the wind speed, s.

54. **a.** 9

b. $E = 10^{3/2(M+9.9)}$; The inverse gives the amount of energy released from an earthquake of magnitude M.