48. A, B, C, and E

49. $3y^2$

50. $4rt^2$

51. $\frac{m^2}{n}$

52. $\frac{k^4}{2|z|}$

53. $\frac{|g|}{|h|}$

54. $n^2|p|,\ n \neq 0,\ p \neq 0$

55. Absolute value was not used to ensure that all variables are positive;
$\frac{\sqrt[6]{2^6(h^2)^6}}{\sqrt[6]{g^6}} = \frac{2h^2}{|g|}$

56. *Sample answer:* $\sqrt[6]{x^6} = |x|$ requires absolute value because x could be negative; $\sqrt[6]{x^{12}} = x^2$ does not require absolute value because x is being squared.

57. $9a^3b^6c^4\sqrt{ac}$

58. $5rs^3t^2\sqrt[3]{rt}$

59. $\frac{2m\sqrt[3]{5mn^3}}{n^2}$

60. $3x\sqrt{y},\ y \neq 0$

61. $\frac{\sqrt[6]{w^5}}{5w^6}$

62. $\sqrt[4]{v^{11}},\ v \neq 0$

63. $\frac{2v^{3/4}}{3w},\ v \neq 0$

64. $\frac{x^{3/4}y^{9/4}z^{1/3}}{8xz},\ y \neq 0$

65. $21\sqrt[3]{y}$

66. $6\sqrt{2z}$

67. $-2x^{7/2}$

68. $10m^{7/3}$

69. $4w^2\sqrt{w}$

70. $-p^{3/4}$

71. $P = 2x^3 + 4x^{2/3}$
$A = 2x^{11/3}$

72. $P = 12x^{1/3}$
$A = 6x^{2/3}$

73. about 0.45 mm

74. **a.** about 579.56 cm^2
b. about 2204.57 cm^2
c. about 16,670.96 cm^2

75. no; The second radical can be simplified to $18\sqrt{11}$. The difference is $-11\sqrt{11}$.

76. **a.** about 1.98
b. about 1.56
c. about 3.08

77. $10 + 6\sqrt{5}$

78. The graph of g is A, the graph of f is B;
$f(x) = 8|x|,\ g(x) = 4x^2$

79. **a.** $r = \sqrt[3]{\frac{3V}{4\pi}}$

b. $S = 4\pi\left(\sqrt[3]{\frac{3V}{4\pi}}\right)^2$

$S = \frac{4\pi(3V)^{2/3}}{(4\pi)^{2/3}}$

$S = (4\pi)^{3/3 - 2/3}(3V)^{2/3}$

$S = (4\pi)^{1/3}(3V)^{2/3}$

c. The surface area of the larger balloon is $2^{2/3} \approx 1.59$ times as large as the surface area of the smaller balloon.

80. no; When x is negative, the expressions are different.

81. when n is even and m/n is odd