

Name _____

Homework 6
section 1.6

1. (2, 4) An open-top aquarium of height 1.5 ft is to have a volume of 6 ft^3 . Let l denote the length of the base, and let w denote the width.

(a) Express w as a function of l .

(b) Express the total number of square feet S of glass needed to construct the aquarium as a function of l . Assume that the base is also made of glass.

2. (4) According to *Car and Driver*, an Alfa Romeo going at 70 mph requires 177 feet to stop. Assuming that the stopping distance is proportional to the square of the velocity, find the stopping distances required by an Alfa Romeo going at 40 mph and 150 mph.

3. (2, 2, 4) The DuBois formula relates a person's surface area s , in m^2 , to weight w , in kg, and height h , in cm, by

$$s = 0.01w^{0.25}h^{0.75}.$$

- (a) What is the surface area of a person who weighs 55 kg and is 165 cm tall?
- (b) What is the weight of a person whose height is 180 cm and who has a surface area of 1.5 m^2 ?
- (c) For people of fixed height 170 cm, solve for w as a function of s . Simplify your answer.
4. (2) Values of three functions are given in the tables below, rounded to two decimal places. Two are power functions and one is an exponential. One of the power functions is a quadratic and one is a cubic.

x	$f(x)$	t	$g(t)$	z	$h(z)$
1.0	4.00	0.0	3.00	2.0	6.00
1.2	6.91	1.0	4.20	2.2	7.26
1.4	10.98	2.0	5.88	2.4	8.64
1.6	16.38	3.0	8.23	2.6	10.14
1.8	23.33	4.0	11.52	2.8	11.76
2.0	32.00	5.0	16.13	3.0	13.50

Which one is exponential? _____

Which one is quadratic? _____

Which one is cubic? _____