

## Lecture Notes Section 2.4 – Applications involving the chain rule

1. The length  $L$  (mm) from nose to tip of the tail of a Siberian tiger can be estimated using the function  $L = 0.25w^{2.6}$  where  $w$  is weight (kg). Also, when a tiger is less than 6 months old, its weight (kg) can be estimated in terms of age  $A$  (days) by the function  $w = 3 + 0.21A$ 
  - a. At what rate is the length of the tiger increasing with respect to its weight when it weighs 60kg?
  - b. How long is a Siberian tiger when it is 100 days old?
  - c. At what rate is its length increasing at 100 days old?
2. Suppose the daily level of carbon monoxide in the air can be modeled by the function  $c(p) = \sqrt{0.5p^2 + 17}$  parts per million when the population is  $p$  thousand. It is estimated that  $t$  years from now, the population will be  $p(t) = 3.1 + 0.1t^2$  thousand. At what rate will the carbon monoxide level be changing with respect to time 3 years from now?

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