

4. (8 points) Determine a and b for the function of the form $y = f(t) = at^2 + b/t$, with a local minimum at $(1,12)$.

5. (6 points) The circulation time of a mammal (that is, the average time it takes for all the blood in the body to circulate once and return to the heart) is proportional to the fourth root of the body mass of the mammal. The constant of proportionality is 17.40 if circulation time is in seconds and body mass is in kilograms. The body mass of a certain growing child is 45 kg and is increasing at a rate of 0.1 kg/month. What is the rate of change of the circulation time of the child?