

Worksheet 12

Name:

1. Find the cubic polynomial of the form $f(x) = x^3 + ax^2 + bx + c$ with the following properties:

- (1) The y -intercept is at the point $(0, 0)$
- (2) There is a critical point at $x = 1$
- (3) The inflection point occurs at $x = 2$

2. The temperature T (in $^{\circ}\text{C}$) of a pizza put a 200°C oven is given as a function of time t (in minutes) by the formula $T(t) = a(1 - e^{-kt}) + b$.

- (a) Find a and b given that the initial temperature of the pizza is 20°C .
- (b) Find k given that the temperature of the pizza is initially increasing at a rate of 2°C per minute.