

My Thanksgiving Calculus Bonus _____

1. Skippy is thawing a frozen turkey for Thanksgiving. He bought the frozen turkey and placed it in his kitchen to thaw. The initial temperature of the turkey was $20^{\circ}F$ and after 24 hours, the turkey finally thawed to a temperature of $45^{\circ}F$. Show that there must have been a time when the turkey was thawing at a rate of about $1.042^{\circ}F/hr$

2.

Let $y(t)$ represent the temperature of a pie that has been removed from a $450^{\circ}F$ oven and left to cool in a room with a temperature of $72^{\circ}F$, where y is a differentiable function of t . The table below shows the temperature recorded every five minutes.

t (min)	0	5	10	15	20	25	30
$y(t)$ ($^{\circ}F$)	450	388	338	292	257	226	200

- a. Use data from the table to find an approximation for $y'(18)$, and explain the meaning of $y'(18)$ in terms of the temperature of the pie. Show the computations that lead to your answer, and indicate units of measure.

3.

A bowl of soup is placed on the kitchen counter to cool. Let $T(x)$ represent the temperature of the soup at time x , where T is a differentiable function of x . The temperature of the soup at selected times is given in the table below.

x (min)	0	4	7	12
$T(x)$ (°F)	108	101	99	95

Use data from the table to find the average rate of change of $T(x)$ over the time interval $x = 4$ to $x = 7$.

4.

Car A has positive velocity $v_A(t)$ as it travels on a straight road, where v_A is a differentiable function of t . The velocity is recorded for selected values over the time interval $0 \leq t \leq 10$ seconds, as shown in the table below.

t (sec)	0	2	5	7	10
$v_A(t)$ (ft/sec)	0	9	36	61	115

- a. Use data from the table to approximate the acceleration of Car A at $t = 8$ seconds. Indicate units of measure.