Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Unit 7: Calculus Quest Review

1. For the polynomial function ****

a: Find the derivative

b: Find the equation of the tangent line at x = 1

2. Find the values for x when the gradient of the tangent line is 4.

3. If the price charged for a candy bar is p(x) cents, then x thousand candy bars will be sold in a certain city, where . How many candy bars must be sold to maximize revenue?

Hint: Revenue = price times quantity, where quantity is x

4. A container in the shape of a right circulur cylinder with no top has surface area 3π ft2. What height, h, and base radius, r, will maximize the volume of the cylinder?

5. Consider the function, .

a. Calculate f(4). [2 marks]

b. Write down the y-intercept. [1 mark]

c. Determine the x-intercepts. [3 marks]

d. ketch the graph of the function for and . [4 marks]

e. Find . [2 marks]

f. Find the coordinates of the minimum point. [2 marks]

g. Find the gradient of the tangent at x = 4. [2 marks]

h. Determine the equation of the tangent at x = 4. [2 marks]

i. Determine the equation of the normal at x = 4. [4 marks]