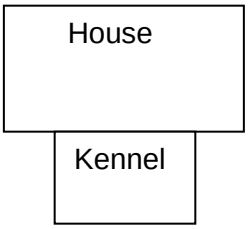
Math 2201: Review Questions Chapter 6



1. Bruno takes tourists on dogsled rides. He is building a kennel on the side of his house for the dogs. He has budgeted for 40 m of fence.

$A(x) = -2x^2 + 40x$

a). Write a quadratic function to represent the area of the kennel.

b). What is the maximum area and what are the dimensions of the kennel?

Max Area = 200 m^2 Dimensions: 10m by 20m

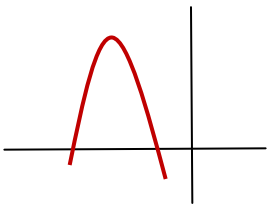
2. Members of a local church hold a fundraiser every Sunday afternoon. They charge $6 for a coldpate. They have regularly sold 120 coldplates and they know for every $1 increase 10 fewer coldplates will be sold. What should the church members charge if they want to raise as much money as they can for the church?

$R(x) = -10x^2 + 60x + 720$ charge $9

3. A quarterback kicks a ball from the ground. It goes over the goal post and lands on the ground 50 ft away. If the ball reaches a maximum height of 20 ft during its flight, determine the quadratic function that models this situation and state the domain and range.

Vertex Form: $y = \frac{-4}{125}(x-25)^2 + 20$ Factored Form: $y = \frac{-4}{125}x(x-50)$

Domain: $0 \le x \le 50, x \in R$ Range: $0 \le y \le 20, y \in R$

Vertex (-3, 4)	Axis of Symmetry X = -3 Y – intercept (0, -14)	Direction of Opening DOWN
Maximum/Minimum Value Domain x ϵ R Range y ≤ 4, y ϵ R	$y = -2(x+3)^2 + 4$ Sketch 	Number of x-intercepts 2

Vertex

(4, 4)

Axis of Symmetry

X = 4

Y - intercept

(0, -12)

Direction of Opening

DOWN

$y = -x^2 + 8x - 12$

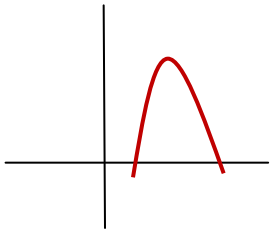
Maximum/Minimum Value

Number of x-intercepts

2

Domain x ϵ R

Sketch



Range y ≤ 4, y ϵ R

Vertex

(1, -18)

Axis of Symmetry

X = 1

Y – intercept (0, -16)

Direction of Opening

UP

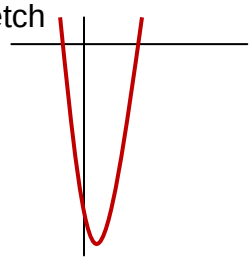
$y = 2(x-4)(x+2)$

Maximum/Minimum Value

x-intercepts

(4, 0) and (-2, 0)

Sketch



Domain x ϵ R

Range y ≥ -18, y ϵ R