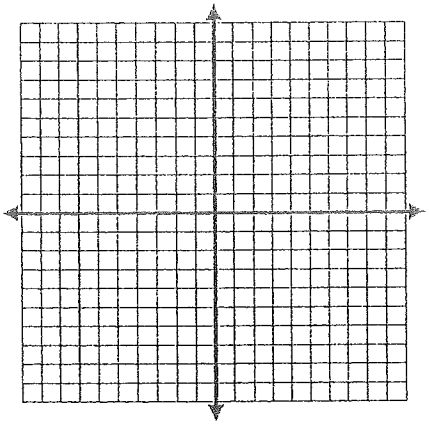
Algebra 1: Unit 7, Homework Handout 7.1: Identifying and Characteristics of Quadratic Functions Name:

Complete the chart with reasonable x-values, graph the function. Find the vertex and axis of symmetry. State the domain and range.

1.

x					
$f(x) = 3x^2$					



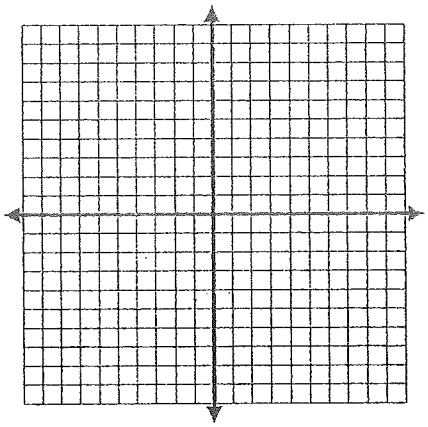
Direction of opening: Maximum/Minimum:

Vertex: Axis of Symmetry:

Domain: Range:

2.

x					
$f(x) = -4x^2$					



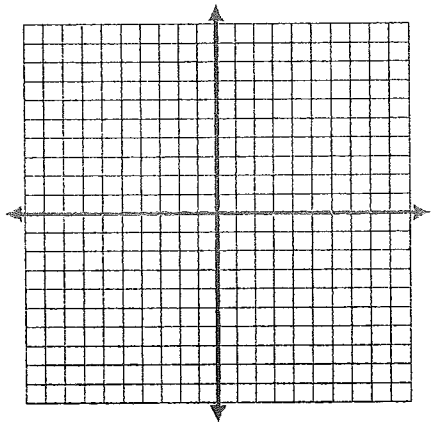
Direction of opening: Maximum/Minimum:

Vertex: Axis of Symmetry:

Domain: Range:

3.

x					
$f(x)=\frac{1}{4}x^2$					



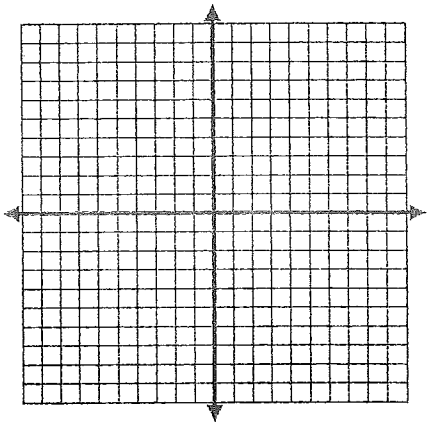
Direction of opening: Maximum/Minimum:

Vertex: Axis of Symmetry:

Domain: Range:

4.

x					
$f(x)=-\frac{2}{3}x^2$					



Direction of opening: Maximum/Minimum:

Vertex: Axis of Symmetry:

Domain: Range:

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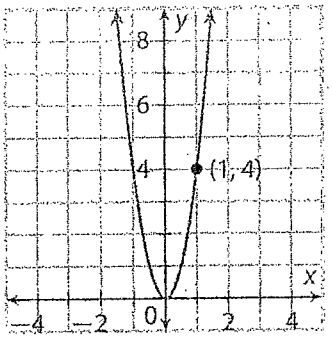
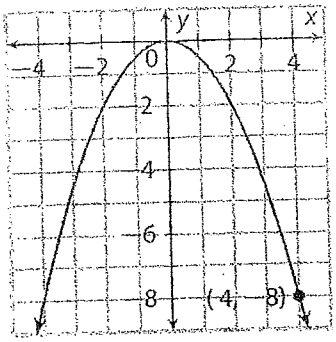
Write the rule of a Quadratic Function (Parabola).

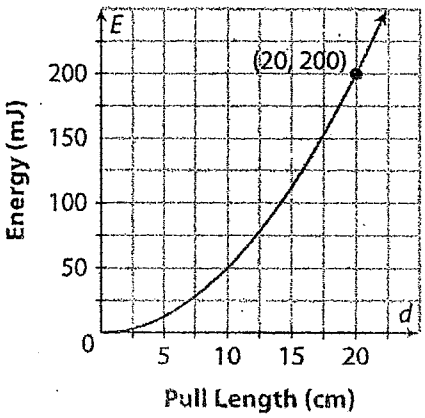
5.

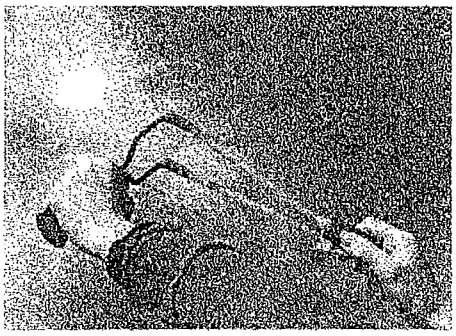


6.



7. A slingshot stores energy in the stretched elastic band when it is pulled back. The amount of stored energy versus the pull length is approximately parabolic. The graph below shows the stored energy in millijoules versus pull length in centimeters.

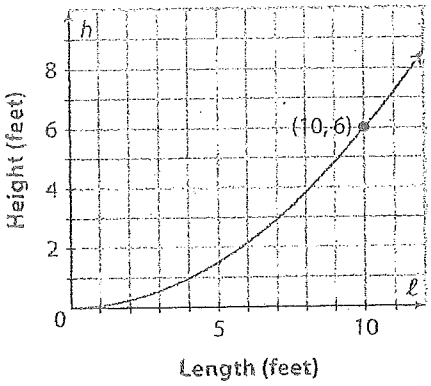


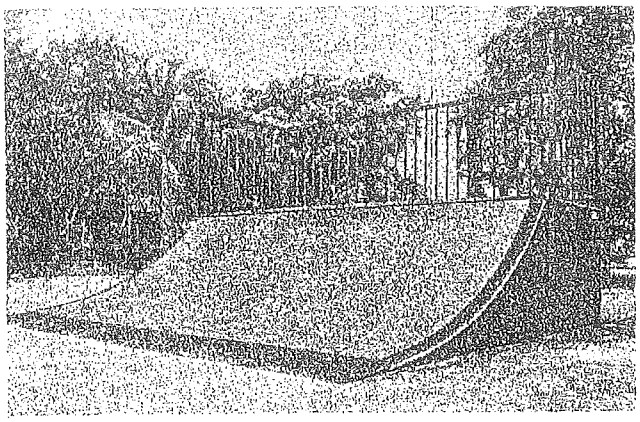


a) Describe what the vertex, y-intercept, and endpoint represent.

b) Determine the function, *E(d)*, that describes this graph.

8. Shane is building a homemade skate ramp and wants to model the shape as a parabola. He sketches out a cross section shown in the graph below.





a) Describe what the vertex, y-intercept, and endpoint represent.

b) Determine the function, $h(\ell)$, that describes this graph.

Higher Order Thinking

9. Explain how you know, without graphing, what the graph of $f(x)=\frac{1}{10}x^2$ looks like.

10. A quadratic function has a minimum value when the function's graph opens upward, and it has a maximum value when the function's graph opens downward. In each case, the minimum or maximum is the y-coordinate of the vertex of the function's graph. What can you say about "a" when the function $f(x)=ax^2$ has a minimum value? A maximum value? What is the minimum or maximum value in each case?