Review Pg. 353 #14 (don't do a table of values)

U5L2 – 4.3 Transformations of Quadratic Functions

Students will, through investigation, learn how you can transform the graph of $y = x^2$ to obtain the graphs of relations in the form $y = a(x – h)^2 + k$

Complete investigations pg. 357 – 359

Read the key ideas on pg. 360

Examples

1. For each relation:

i) state the coordinates of the vertex
ii) state the axis of symmetry
iii) state the direction of opening
iv) sketch the graph

a) $y = (x+2)^2 - 4$ b) $y = -2x^2 + 6$ c) $y = \frac{1}{2}(x-3)^2 - 1$

2.

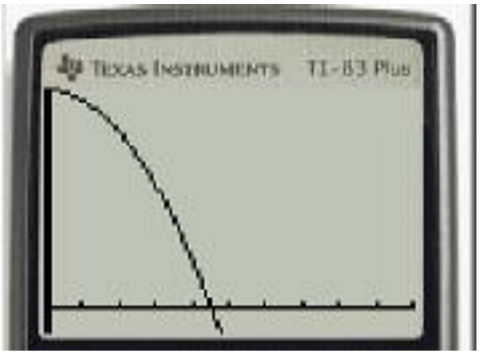
a) Sketch the new graph that results from applying these transformations to $y = x^2$:

1) translate 3 units left
2) stretch vertically by a factor of 2
3) translate 1 unit up

b) Find the equation of the new graph.

3. When a stationary object is released to fall freely, its height h, in metres, after t seconds is $h = -.5gt^2 + k$, whee g is the acceleration due to gravity and k is the height from which the object is dropped. On Earth, g = 9.8m/s^2. For a charity event the principal pays to drop a watermelon from a height of 100m.

a) The clock that times the fall of the watermelon runs for 3s before the principal releases the watermelon. How does this change the graph shown? Find the equation of this relation.



b) On Mars, g = 3.7m/s^2. Suppose the principal dropped a watermelon from 100m on Mars. How does the graph for Mars look, compared to the one above? Find the equation of this relation.

c) Now, suppose the principal drops another watermelon from a height of 50m on Earth. How does the graph in a) change? How does the equation change?

Ex. Pg. 363 – 368 #(1 – 2)all,(3 – 4)alt,(5 – 6)all,(7 – 8)alt,9all,12alt,16alt,18