**Finding an Exponential Equation from a Graph**

**Needed Information**

Finding an equation in the form y = abx from a graph is easy if we know two important points. One of the points is the y-intercept and the other is the point (1,?).

Let’s say that a graph crosses the y axis at (0,3) and goes through the point (1,6).

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From the graph, we know that the y-intercept is the same as the starting point, so the value of *a* in the equation is 3.

We also know that the ratio of the y-values for (0,3) and (1,6) is 2. That means the value of *b* in the equation is 2.

The equation is y = 3(2)x

This method will be easy to use as long as we have two points with x-values that a one apart. Let’s look at an example of a graph that goes the other way.

Let’s say the graph goes through the points (0,2) and (2,1).

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What is the value of *a* in this situation? How do you know?

What is the value of *b* in this situation? How do you know?

When we don’t have two consecutive points, we can use graphing calculators to find the equation. It is important to have several points to make sure we should be using an exponential model. Let’s do one example.

A graph contains the points (1,5) and (3,45). Assume that this is an exponential function (a dangerous assumption in some cases. Find the equation that corresponds to the graph.