7.04 – Compound Interest and Graphing Practice Name ___________________________________

a) Find the value at maturity of a $3,000 investment compounded annually at a 4% rate for 6 years.

b) Grace has an $8,000 investment compounded continuously at a 5% rate for 12 years. Will the value of the investment have reached $10,000 by the end of year 3?

c) Will a $10,000 investment compounded quarterly at a 3.2% rate have doubled in value by the end of its ninth year?

d) Find the value at maturity of a $100,000 investment compounded continuously at a 5% rate for 10 years.

The population of colony of termites grows at a rate described by the function $f(t) = 16e^{0.08t}$ where *t* is the number of minutes in ideal conditions.

Determine how many termites there were after 10 minutes.

Determine how many termites there were after 20 minutes.

Determine how many termites there were after 30 minutes.

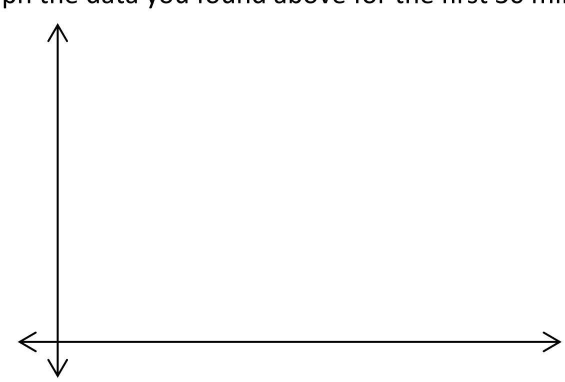
How many termites were added to the colony in the first 10 minutes?

How many termites were added to the colony in the second 10 minutes? (From minute 10 to minute 20)

How many termites were added to the colony in the third 10 minutes? (From minute 20 to minute 30)

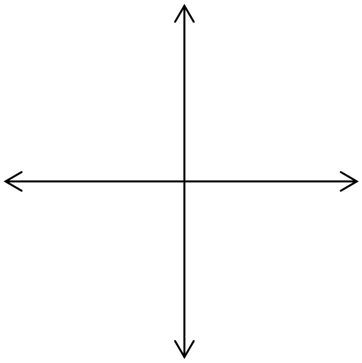
Did the colony add the same number of termites in each stretch of ten minutes? Why or why not?

Graph the data you found above for the first 30 min:

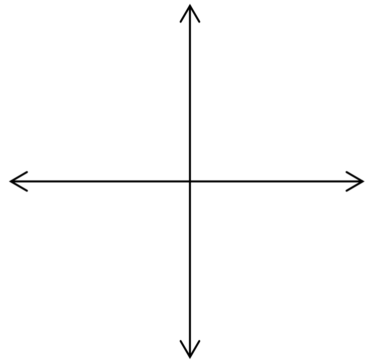


Graph the following functions. Label at least two points for each graph.

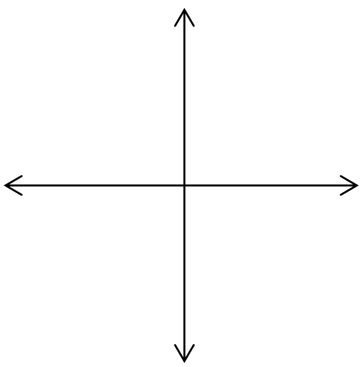
$f(x) = 3^{(x-5)}$



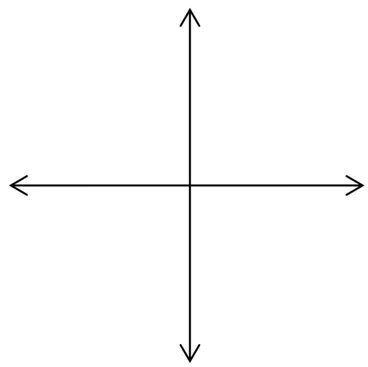
$g(x) = 3^{(x-5)} + 3$



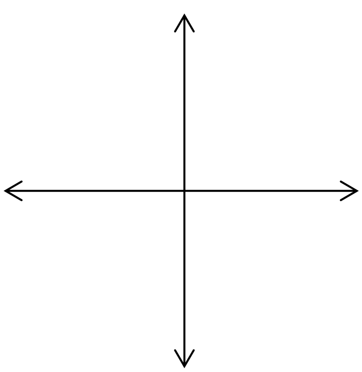
$h(x) = 4 \cdot \left(\frac{1}{2}\right)^{(x+1)} + 2$



$j(x) = -2 \cdot 2^{(x+1)} - 2$



$k(x) = 5 \cdot 2^{(x-1)} + 4$



$m(x) = 2 \cdot \left(\frac{2}{3}\right)^{(x-6)} + 4$