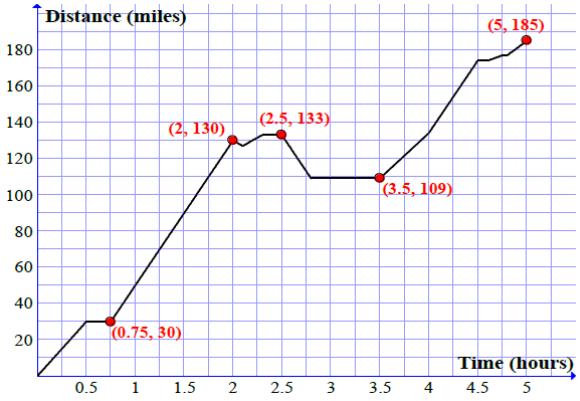
Average Rate of Change

What if we want to calculate the rate of change but our function isn't a straight line? We can still calculate an "average" slope using the **average rate of change.**

Some examples of average rates of change are:

Average Speed

Let's say we took a road trip from Fayetteville to Cushman, a distance of about 185 miles. The graph on the right shows the distance versus time of the trip



a) Calculate the average speed of the entire trip $=\left(\frac{total\ miles}{total\ time}\right)$

b) What was your average speed from $t = 0.75$ to $t = 2$? From $t = 2$ to $t = 3.5$?

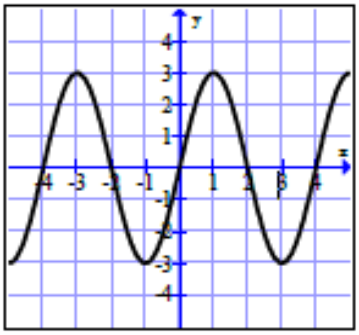
c) When, if ever, was your average speed 0 mph?

d) Why does your average speed change when you look at different intervals?

Finding Average Rate of Change Using the Graph

To find an average rate of change using the graph of the function, we draw a **secant line** between two specific points on the graph. The average rate of change for that interval is the slope of the secant line.

For each of the following functions draw the secant line between $x = -3$ and $x = 1$ on each graph. Then find the slope of the secant line to give you the average rate of change.



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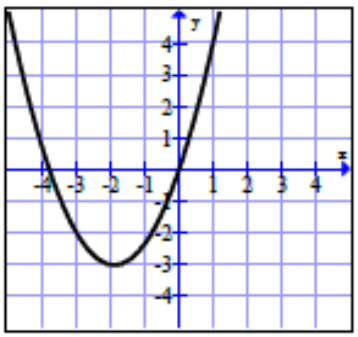

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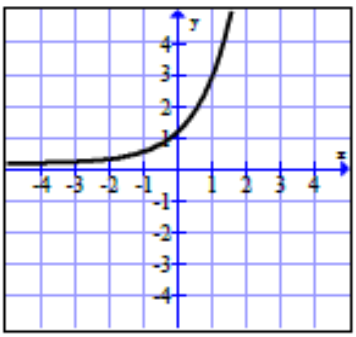

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