Average Rate of Change!

You already know average rate of change. You’re just used to calling it slope.

$$Average ROC=\frac{Difference in output}{Difference in input}=\frac{f\left(b\right)-f(a)}{b-a}$$

Example:

Let $f\left(x\right)=x^{2}-3$

* Find the average rate of change of $f(x) $from $x=3$ to $x=7$.

$f\left(7\right)=7^{2}-3=46$ $f\left(3\right)=3^{2}-3=6$

$$Average ROC=\frac{f\left(7\right)-f(3)}{7-3}=\frac{46-6}{4}=10$$

* Find the average rate of change of $f\left(x\right) $from $x=1$ to $x=4$.

$$Average ROC=\frac{f\left(4\right)-f(1)}{4-1}=\frac{13-(-2)}{3}=5$$

Try these:

1. $g\left(x\right)=x^{2}-x+4$

Find the average ROC of *g* on $\left(-1,6\right)$

Find the average ROC of *g* on $(2, 10)$

1. $g\left(x\right)=3x+2$

Find the average ROC of *g* on (1, 4)

Find the average ROC of *g* on $\left(a,c\right).$

For more practice, see the book, Section 2.1, page 187 number 78.

My favorite math problem (well…one of them) of all time!!!

The police have accused a driver of breaking the speed limit of 60 miles per hour. As proof, they provide two photographs. One photo shows the driver's car passing a toll booth at exactly 6 PM. The second photo shows the driver's car passing another toll both 31 miles down the highway at exactly 6:30 PM. Does the photo evidence prove that the driver broke the speed limit during this time?

Use Average Rate of Change to help solve the mystery!