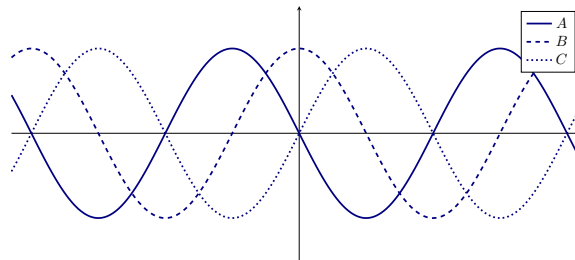**Break-Ground:**

Rates of rates

Two young mathematicians look at graph of a function, its first derivative, and its second derivative.

Check out this dialogue between two calculus students (based on a true story):

Devyn: Riley, check out this plot:

Riley: Whoa, that looks cool!

Devyn: I know! Anyway, someone told me that this was a graph of a function, its derivative, and the derivative of the derivative. Which one is which?

Riley: Hmmmmm. I'm not sure.

Problem 1 *Which of the following is true?*

Multiple Choice:

(a) *Curve A is increasing when curve B is positive.*

(b) *Curve A is increasing when curve C is positive.*

(c) *None of the above.* ✓

Problem 2 *Which of the following is true?*

Multiple Choice:

Learning outcomes: Define higher order derivatives. Identify the relationships between the function and its first and second derivatives.

(a) *Curve B is increasing when curve A is positive.* ✓

(b) *Curve B is increasing when curve C is positive.*

(c) *None of the above.*

Problem 3 *Which of the following is true?*

Multiple Choice:

(a) *Curve C is increasing when curve A is positive.*

(b) *Curve C is increasing when curve B is positive.* ✓

(c) *None of the above.*