Office Hours!

Instructor:

Peter M. Garfield, garfield@math.ucsb.edu

Office Hours:

~~Mondays 2–3PM~~ Not Monday!

Tuesdays 10:30–11:30AM, Next Tuesday: 2:00–3:30PM, too!

Thursdays 1–2PM

or by appointment

Office:

South Hall 6510

Winter '17 #1

Use the graph given to find

(a) $\log(6.3 \times 3.2)$

(b) Solve $10^x = 10/73$

(c) Find a value c so that the average rate of change of 10^x between $x = 0.3$ and $x = c$ is 5

Winter '17 #2

Compute the following derivatives.

(a) $\dfrac{d}{dx}\left(5x^4 - 4x + 2\right) =$

(b) $\dfrac{d^2}{dx^2}\left(2e^{5x} - 3x^2\right) =$

(c) $\dfrac{d}{dx}\left(x^e + e^x + e^k\right) =$

[k is a constant]

Winter '17 #3

The depth of a certain lake decreases with time as runoff brings silt in to fill the lake. Suppose $f(t)$ gives the depth, in meters, of the lake t years after the year 2010. Suppose $f(7) = 100$ and $f'(7) = -3$. Use the tangent line approximation to estimate...

(a) The expected depth of the lake in the year 2020.

(b) When (what year) will the depth of the lake be 70 meters?

Winter '17 #4

This question is about the function

$$f(x) = x^3 + 3x^2 + 4x + 3$$

(a) What is the slope of the graph $y = f(x)$ at $x = -2$?

(b) What is the equation of the tangent line to the graph at $x = -2$?
[give answer in the form $y = mx + b$]

(c) On what interval is the graph of $y = f(x)$ concave up?

(d) For what value(s) of x does the graph have slope 4?

Winter '17 #5

The height of a rocket above the ground in meters after t seconds is $h(t) = 400 + 20t - 5t^2$.

(a) What was the velocity of the rocket after t seconds?

(b) What was the acceleration of the rocket after t seconds?

(c) What was the initial speed of the rocket?

(d) After how many seconds was the velocity 15 m/s?

(e) What was the average speed of the rocket between $t = 0$ and $t = 2$ seconds?