Tuesday…10/21

What a great day to be in calculus!!

….right?!

…crickets

10/21 Tuesday!

- Starter:

a) Calculate the derivative (the equation to find the slope of a tangent line for any point on the curve) for:

$$\boldsymbol{f(x) = \frac{x}{\pi} + cos(x)}$$

b) What is the the equation for $\mathbf{f'(x)}$

c) At what value of x in the interval $[0, 2\pi]$ will the tangent line to the curve be horizontal?

d) Verify your answer in part c by using a calculator.

e) Make a graphical observation about the points where the tangent line's slope is 0.

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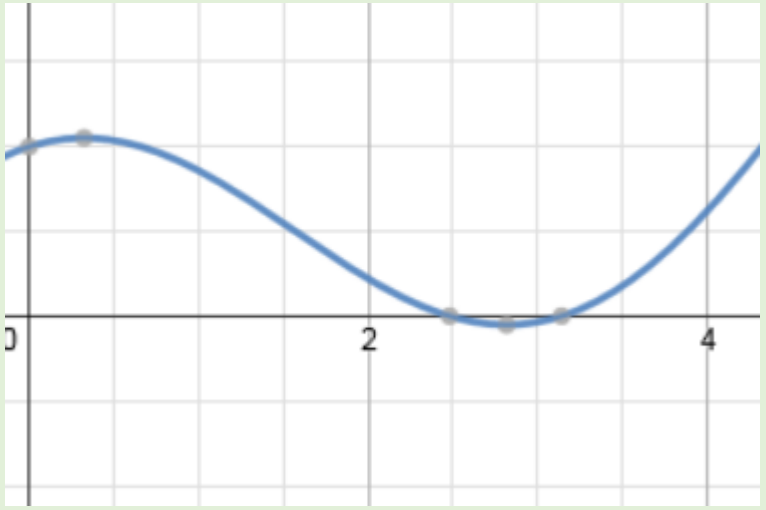

Agenda Today (Friday, October 17th)

- ~~***Starter***~~ ***√***
- ***Product rule of derivatives***
- ***Examples***
- ***Quotient rule for derivatives***
- ***Examples***
- ***Derivatives of trig functions (notecard memorizers!!)***

Product rule of derivatives *(page 118-119)*

General form

$$h(x) = f(x)g(x)$$
$$h'(x) = f(x)g'(x) + f'(x)g(x)$$

Example

$$h(x) = (2x^2 - 3x)(x^3 - 8)$$

Product rule of derivatives *(page 118-119)*

<u>YOU TRY!!</u>

1) $f(x) = 2x^3\sin(\mathrm{x})$

2) $f(x) = 3xcos(\mathrm{x}) - 3sinx$

Product rule of derivatives *(page 118-119)*

<u>YOU TRY!!</u>

1) $f(x) = 2x^3\sin(\mathrm{x})$

2) $f(x) = 3xcos(\mathrm{x}) - 3sinx$

More practice with product rule

- $y = (3x - 4)(x^3 + 5)$

- $f(t) = \sqrt{t}(t^2 + 8)$

- $g(t) = \frac{cost}{t^3}$

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- ~~*Product rule of derivatives*~~ ***√***
- ~~*Examples*~~ ***√***
- ***Quotient rule for derivatives***
- ***Examples***
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Quotient rule of derivatives *(page 118-119)*

General form

$$h(x) = \frac{f(x)}{g(x)}$$

$$h'(x) = \frac{f'(x)g(x) - f(x)g'(x)}{[g(x)]^2}$$

Example

$$h(t) = \frac{cost}{t^3}$$

Quotient rule of derivatives *(page 120-121)*

General form

$$h(x) = \frac{f(x)}{g(x)}$$

$$h'(x) = \frac{f'(x)g(x) - f(x)g'(x)}{[g(x)]^2}$$

Example

$$h(t) = \frac{cost}{t^3}$$

Quotient rule of derivatives *(page 120-121)*

<u>YOU TRY!!</u>

1st example

$$f(x) = \frac{5x^2 - 2}{x^2 + 1}$$

2nd example (rewriting makes a ton easier)

$$h(t) = \frac{3 - \frac{1}{x}}{t + 5}$$

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- ~~*Starter*~~ ✓
- ~~*Product rule of derivatives*~~ ✓
- ~~*Examples*~~ ✓
- ~~*Quotient rule for derivatives*~~ ✓
- ~~*Examples*~~ ✓
- *Derivatives of trig functions (notecard memorizers!!)*

Recommended Practice!

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#1-5 odd (product Property)

#7-11 odd (Quotient Property)

#25-31 odd (mixed Practice)