

Please. Use “ $f(x)$ notation” when writing fncs; in particular, for trig and log fncs. E.g, write “ $\sin(x)$ ” rather than the horrible $\sin x$ or $[\sin x]$. Do **not** approx.: If your result is “ $\sin(\sqrt{\pi})$ ” then write that rather than $.9797\dots$. Write expressions unambiguously e.g, “ $1/a+b$ ” should be bracketed either $[1/a]+b$ or $1/[a+b]$. (Be careful with **negative** signs!)

Please write **DNE** in a blank if the described object does not exist or if the indicated operation cannot be performed.

A1: Show no work.

[z] What is a polar bear? Answer:
A rectangular bear after a coordinate transform.

[a] The slope of line $3[y-5] = 2[x-1]$ is _____.

Point $(4, y)$ lies on this line, where $y =$ _____.

[b] The solutions to equation $3x^2 = 1 - x$ are
 $x =$ _____.

[c] $\left[\sqrt{3}^{\sqrt{2}}\right]^{\sqrt{8}} =$ _____, $\log_8(4) =$ _____.

[d] Let $B(x) := x^x$. Its derivative, then, is
 $B'(x) =$ _____.
[Hint: How is x^x defined ITOf the exponential fnc?]

[e] For fnc $y = h(x) := [5 + \sqrt[3]{x}]/2$, its inverse fnc is $h^{-1}(y) =$ _____.

[f] Suppose g is a fnc with g' never zero. Let h be the inverse fnc of g . In terms of h , g and g' , write a formula for $h'(x) =$ _____.

[Hint: The Chain rule.]

[f*] Let $g(x) := x^3 + x$. Then $g^{-1}(10) =$ _____.
and $[g^{-1}]'(10) =$ _____.



Below, f and g are differentiable fncs with

$$\begin{aligned}f(2) &= 3, & f'(2) &= 19, & f(3) &= 5, & f'(3) &= 17, \\g(2) &= 11, & g'(2) &= \frac{1}{2}, & g(3) &= 13, & g'(3) &= 7, \\& & & & g(5) &= 23, & g'(5) &= 29.\end{aligned}$$

Define the composition $C := g \circ f$. Then

$$C(2) = \text{_____}; \quad C'(2) = \text{_____}.$$

Please write each answer as a product of numbers;
do not multiply out. [Hint: The Chain rule.]



Compute the sum of this geometric series:

$$\sum_{n=0}^{\infty} [-1]^n \cdot [3/5]^n = \text{_____}.$$



The Taylor series, centered at zero, for $\cos(2x)$ is
 $\cos(2x) =$ _____.

A2: Write the uppercase versions of the following Greek letters, along with their names.

Example: “ $\alpha:$ _____.” You fill in: *A (alpha)*.

$\eta:$ _____ $\lambda:$ _____ $\sigma:$ _____
 $\mu:$ _____ $\gamma:$ _____

End of Prereq-A

A1: _____ 110pts

A2: _____ 10pts

Total: _____ 120pts

HONOR CODE: *“I have neither requested nor received help on this exam other than from my professor (or his colleague).”*

Name/Signature/Ord

Ord: _____