

DiffyQ Prereq A

MAP2302
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A1: Show no work.

a $[\sqrt{3}^{\sqrt{8}}]^{\sqrt{2}} = \dots$. $\log_{64}(16) = \dots$

b The **slope** of line $3[y - 5] = 2[x - 2]$ is \dots
 Point $(-4, y)$ lies on this line, where $y = \dots$

c The solutions to $3x^2 = 2 - 2x$ are $x = \dots$

d Let $g(x) := x^3 + x$. Then $g^{-1}(10) = \dots$
 and $[g^{-1}]'(10) = \dots$

e Let $y = f(x) := [5 + \sqrt[3]{x}]/2$. Its inverse-function is $f^{-1}(y) = \dots$

f Below, f and g are differentiable fncs with

$f(2) = 3, \quad f(3) = 5, \quad f'(2) = 19, \quad f'(3) = 17,$
 $g(2) = 11, \quad g(3) = 13, \quad g'(2) = \frac{1}{2}, \quad g'(3) = 7,$
 $f(5) = 43, \quad g(5) = 23, \quad f'(5) = 41, \quad g'(5) = 29.$

Define the composition $C := g \circ f$. Then $C(2) = \dots$; $C'(2) = \dots$

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

g For $x > 0$, let $B(x) := x^x$. Its derivative is $B'(x) = \dots$
 [*Hint:* How is y^z , for $y > 0$, defined in terms of the exponential fnc?]

h Quadratic $15x^2 + 23x + 6 = [Ax - \alpha] \cdot [Bx - \beta]$, for numbers $A = \dots$, $\alpha = \dots$; $B = \dots$, $\beta = \dots$.

i Partial-fraction decomposition:
 $\frac{x+1}{x^2+x-2} = \dots + \dots$

j $\int t \cdot e^t dt = \dots$

End of DiffyQ Prereq A

A1: ___ ___ 90pts

Total: ___ ___ 90pts

Please PRINT your Name

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 Student ID #, please

HONOR CODE: "I have neither requested nor received help on this exam other than from my professor."

Signature: