Calculus Web Assignments

Web Assignments are intended to be completed with a partner. Both partners should individually work each of the problems, followed by a collaborative discussion about the problem.

Both partners are required to participate in the "Honor-System" Grading of the Web Assignment.

Calculus: Web Assignment #23

Multiple Choice

Identify the choice that best completes the statement or answers the question.

____ 1. Evaluate

$$\frac{d}{dx}\int_0^x \left(e^{\arctan t}\right)dt$$

Select the correct answer.

a. $e^{\arctan x}$

b. $e^x - \arctan x$

c. $e^{\arctan t \frac{\pi}{4}}$

d. x

e. $e^{\arctan t}$

____ 2. If $f(x) = \frac{x}{\ln x}$, find $f'\left(e^3\right)$.

Select the correct answer.

a. $e^3 / 9$

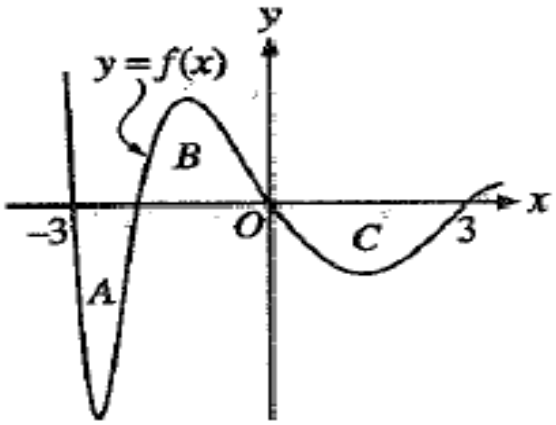
b. $9/2$

c. 0.3

d. $2/9$

e. $3/2$

____ 3.



The regions A, B, and C in the figure above are bounded by the graph of the function f and the x-axis. If the area of each region is 2, what is the value of

$$\int_{-3}^{3} \left(f(x)+1\right)\,dx \;?$$

a. 4
b. -1
c. 12
d. -2
e. 7

____ 4. If $\csc\left(2x^2+1\right)$, *then* $g'(x) =$

a. $-4x\csc\left(2x^2+1\right)\cot\left(2x^2+1\right)$

b. $4x\csc\left(2x^2+1\right)\cot\left(2x^2+1\right)$

c. $4x\cot^2\left(2x^2+1\right)$

d. $-4x\cot^2\left(2x^2+1\right)$

e. $\left(4x^2+1\right)\csc\left(2x^2+1\right)\cot\left(2x^2+1\right)$

____ 5. Evaluate the indefinite integral.

$$\int e^{\cos x} \sin x \, dx$$

Select the correct answer.

a. $-\sin\left(e^{\cos x}\right) + C$

b. $e^{\sin x} + C$

c. $e^{\cos x} \sin x + C$

d. $-e^{\cos x} + C$

e. $-e^{\cos x} \sin x + C$

____ 6. Find all the critical numbers of the function.

$$g(x) = 4x + \sin(4x)$$

Select the correct answer.

a. $\dfrac{\pi n}{2}$

b. $\dfrac{\pi}{4}$

c. $\dfrac{\pi(2n+1)}{4}$

d. none of these

e. $\dfrac{\pi(2n+1)}{8}$

____ 7. If $f(x) = \tan\left(e^{\sin x}\right)$, *then* $f'(x) =$

a. $-e^{\sin x}\sec\left(e^{\sin x}\right)\tan\left(e^{\sin x}\right)$

b. $e^{\sin x}\sec\left(e^{\sin x}\right)\tan\left(e^{\sin x}\right)$

c. $e^{\sin x}\cos x\sec^2\left(e^{\sin x}\right)$

d. $e^{\sin x}\sec^2\left(e^{\sin x}\right)$

e. $-e^{\sin x}\cos x\sec^2\left(e^{\sin x}\right)$

____ 8. What is f(x) if $f'(x) = \dfrac{2x}{x^2-1}$ *and* $f(2) = 0$?

a. $f(x) = \ln\left|x^2-1\right|$

b. $f(x) = \ln\left|x^2-1\right| + \ln 3$

c. $f(x) = 2\ln x - x^2$

d. $f(x) = \ln\left|x^2-1\right| - \ln 3$

e. $f(x) = 2\ln x - x^2 - 2\ln 2 + 4$

____ 9. Find f' in terms of g'.

$f(x) = x^2 g(x)$

Select the correct answer.

a. $f'(x) = 2xg'(x)$

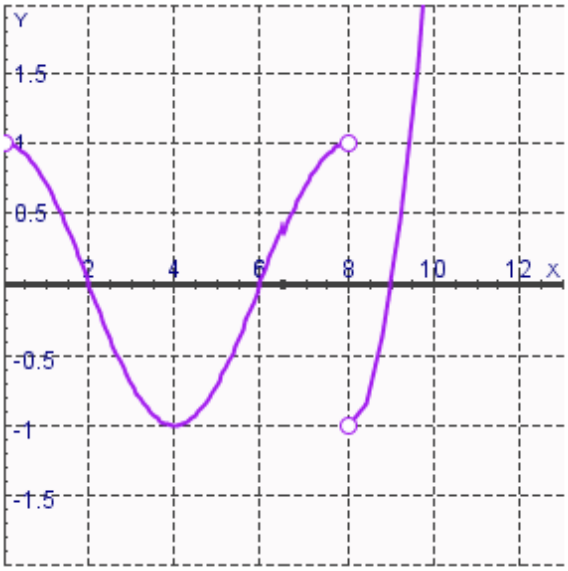
b. $f'(x) = 2xg(x) + x^2 g'(x)$

c. $f'(x) = 2xf'(x) + 2xg'(x)$

d. $f'(x) = 2x + g'(x)$

e. $f'(x) = x^2 g(x) + 2x^2 g'(x)$

____ 10. The graph of the derivative $f'(x)$ of a continuous function f is shown. On what intervals is f decreasing?



Select the correct answer.

a. $(8,9)$
b. $(-1,1)$
c. $(2,6)\cup(8,9)$
d. none of these
e. $(2,6)$