

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 #26

Multiple Choice

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

_____ 1. $\frac{d}{dx} (\arcsin 2x) =$

a. $\frac{-1}{2\sqrt{1-4x^2}}$

b. $\frac{-2}{\sqrt{4x^2-1}}$

c. $\frac{1}{2\sqrt{1-4x^2}}$

d. $\frac{2}{\sqrt{1-4x^2}}$

e. $\frac{2}{\sqrt{4x^2-1}}$

_____ 2. If $F(x) = \int_0^x \sqrt{t^3 + 1} dt$, then $F'(2) =$

a. -3

b. -2

c. 2

d. 3

e. 18

_____ 3. If $y = 10^{\left(x^2 - 1\right)}$, then $\frac{dy}{dx} =$

a. $(\ln 10)10^{\left(x^2 - 1\right)}$

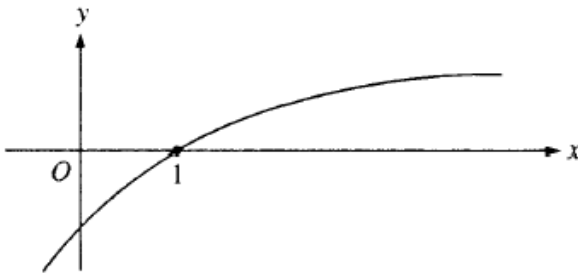
b. $(2x)10^{\left(x^2 - 1\right)}$

c. $2x(\ln 10)10^{\left(x^2 - 1\right)}$

d. $x^2(\ln 10)10^{\left(x^2 - 1\right)}$

e. $\left(x^2 - 1\right)10^{\left(x^2 - 1\right)}$

_____ 4.



The graph of a twice-differentiable function f is shown above. Which of the following is true?

a. $f(1) < f'(1) < f''(1)$

b. $f(1) < f''(1) < f'(1)$

c. $f'(1) < f(1) < f''(1)$

d. $f''(1) < f(1) < f'(1)$

e. $f''(1) < f'(1) < f(1)$

_____ 5. $\lim_{x \rightarrow 1} \frac{x}{\ln x}$ is

- a. 0
- b. $\frac{1}{e}$
- c. 1
- d. e
- e. nonexistent

_____ 6. A spherical balloon is deflating at the rate of $1/3$ in³/sec. At what rate is the radius of the sphere decreasing in inches per second when its surface area is 7 in² (surface area of a sphere = $4\pi r^2$)

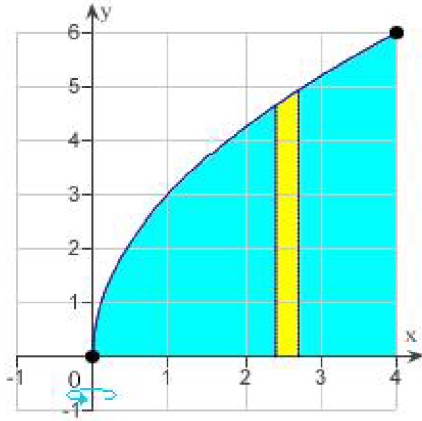
- a. .035
- b. .039
- c. .041
- d. .048
- e. .053

_____ 7. If the accumulation function $F(x)$ is given by

$$F(x) = \int_0^x \left(\frac{1}{11}t^2 + 5 \right) dt, \text{ evaluate } F(9).$$

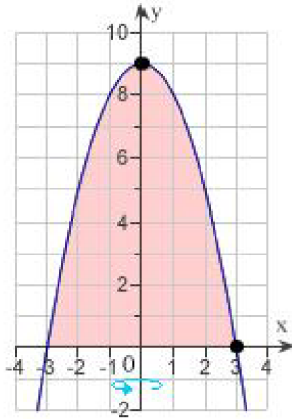
- a. $A = \frac{738}{11}$
- b. $A = \frac{356}{33}$
- c. $A = \frac{852}{11}$
- d. $A = \frac{298}{11}$
- e. $A = \frac{1068}{11}$

- _____ 8. Use the shell method to set up and evaluate the integral $y = 3\sqrt{x}$ that gives the volume of the solid generated by revolving the plane region about the y -axis.



- a. $\frac{192\pi}{5}$
- b. $\frac{384\pi}{7}$
- c. $\frac{192\pi}{7}$
- d. $\frac{384\pi}{5}$
- e. $\frac{96\pi}{5}$

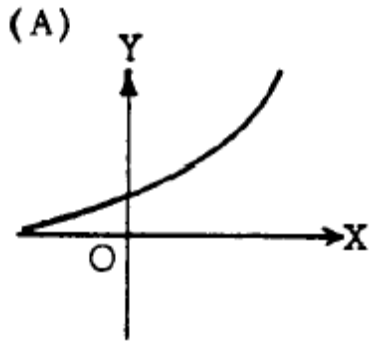
- _____ 9. Set up and evaluate the definite integral for the area of the surface formed by revolving the graph of $y = 9 - x^2$ about the y -axis. Round your answer to three decimal places.



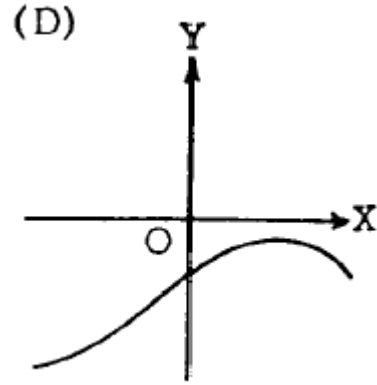
- a. 58.659
- b. 117.319
- c. 235.685
- d. 5.323
- e. 2.661

10. If y is a function of x such that $y' > 0$ for all x and $y'' < 0$ for all x , which of the following could be part of the graph of $y = f(x)$?

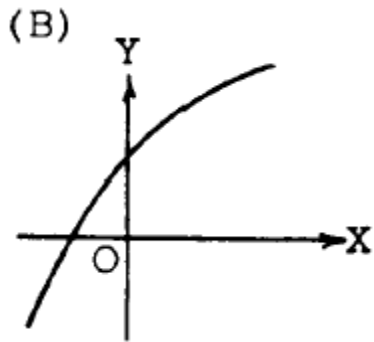
a.



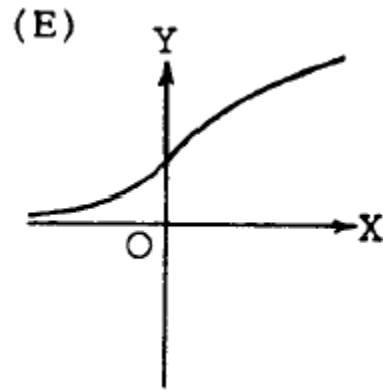
d.



b.



e.



c.

