

Principles of Calculus Modeling: An Interactive Approach by Donald Kreider, Dwight Lahr, and Susan Diesel
Exercises for Section 4.10

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1. (1 pt)
Evaluate $8\arcsin(-0.5)$.

2. (1 pt)
Evaluate $\operatorname{arccot}(74)$.

3. (1 pt)
Evaluate $\sin(\operatorname{arcsec}(4))$.

4. (1 pt)
Evaluate $\arccos(\cos(6\pi))$.

5. (1 pt)
Find the derivative of $f(x) = \arcsin\left(\frac{8x-2}{9}\right)$. Simplify your answer as much as possible.
 $f'(x) =$ _____

6. (1 pt)
Let $y = \arccos\left(\frac{x-8}{8}\right)$. Find y' .

$y' =$ _____

What is the domain of y ?

Lower limit: _____

Upper limit: _____

Choose one of the following to describe this interval.

- A. Closed interval
- B. Open at the lower limit, closed at the upper limit
- C. Open interval
- D. Closed at the lower limit, open at the upper limit

What is the domain of y' ?

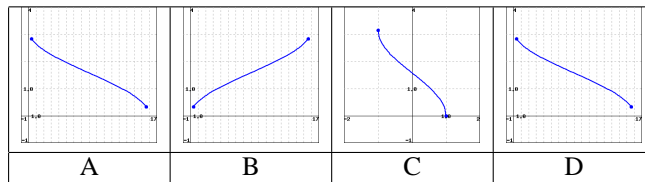
Lower limit: _____

Upper limit: _____

Choose one of the following to describe this interval.

- A. Closed interval
- B. Open at the lower limit, closed at the upper limit
- C. Open interval
- D. Closed at the lower limit, open at the upper limit

Which graph below is the graph of y ? Click the graphs to see a larger view.



7. (1 pt)
Find the derivative of the function $u = z^{12}\operatorname{arcsec}(1+z^{12})$.

$u' =$ _____

Express your answer in terms of **the functions WebWorK understands**.

8. (1 pt)
Find the derivative of the function $F(x) = (16+x^2)\arctan\left(-\frac{x}{4}\right)$.

$F'(x) =$ _____

Express your answer in terms of **the functions WebWorK understands**.

9. (1 pt)
Find the derivative of the function $f(x) = \sqrt{\arcsin(x^2)} - 7x$.

$f'(x) =$ _____

Express your answer in terms of **the functions WebWorK understands**.

10. (1 pt)
Solve the initial-value problem

$$\begin{cases} y'(x) = \frac{1}{\sqrt{1-x^2}} - 4x \\ y(1) = \frac{\pi}{2} + 9 \end{cases}$$

$y(x) =$ _____

11. (1 pt)
Solve the initial-value problem

$$\begin{cases} y'(x) = \frac{1}{\sqrt{1-x^2}} - 8x \\ y\left(\frac{1}{2}\right) = \frac{\pi}{6} + 10 \end{cases}$$

$y(x) =$ _____

12. (1 pt)
What is $\int_{-3}^3 \frac{1}{\sqrt{81-x^2}} dx$?

13. (1 pt)
Suppose $\frac{1}{2}\left(x\sqrt{100-x^2} + 100\arcsin\left(\frac{x}{10}\right)\right) = \int f(x) dx$.
Find $f(x)$.

14. (1 pt)
What is the average value of the function $f(x) = \frac{19}{48+x^2}$ over the interval $[-45, 7]$?

Average value of $f(x) =$ _____

15. (1 pt)

Estimate the value of π by approximating $\int_1^e \frac{1}{x+x(\ln(x))^2} dx$ using 15 circumscribed rectangles along the x axis.

$\pi \approx$ _____

16. (1 pt)

What is $\frac{d}{dx} \arctan(x) \int_{0.2}^x \frac{1}{\sqrt{1-t^2}} dt$?

17. (1 pt)

If $y = \cos(\ln(\arcsin(x)))$, what is y' ?

$y' =$ _____

18. (1 pt)

What is $\frac{d}{dx} \left(\frac{\arcsin(x)^{18}}{\arccos(x)^{18}} \right)$?

19. (1 pt)

What is $\int_2^{10} \frac{1}{\sqrt{1-(\frac{x}{12})^2}} dx$?

20. (1 pt)

What is $\int_0^{26} \frac{1}{\frac{d}{dx} \arcsin(\frac{x}{26})} dx$?

21. (1 pt)

What is $\int \frac{17 \arctan(x)^{16}}{(1+x^2)\sqrt{1-\arctan(x)^{34}}} dx$?

22. (1 pt)

What is $\int \frac{-14x^{13}}{(1+\arccos(x^{14}))^2\sqrt{1-x^{28}}} dx$?

23. (1 pt)

What is $\int_{\sin(\frac{\pi}{16})}^{\cos(\frac{\pi}{16})} \frac{-1}{\sqrt{1-x^2}} dx$?