

#1

Very important explain each step

Evaluate the following indefinite integral.

$$\int \left(\frac{7}{\sqrt{x}} + 7\sqrt{x} \right) dx$$

$$\int \left(\frac{7}{\sqrt{x}} + 7\sqrt{x} \right) dx = \square$$

#2 Very important please explain every step

Determine the following indefinite integral. Check your work by differentiation.

$$\int \left(2x^{\frac{1}{3}} + 4x^{-\frac{1}{3}} + 6 \right) dx$$

$$\int \left(2x^{\frac{1}{3}} + 4x^{-\frac{1}{3}} + 6 \right) dx = \square$$

#3 and 4

A and b

Explain each step

- Find the critical points of the function $u(x) = x^3 + 3x^2 - 24x$
- Find the absolute minimum value and the absolute maximum value of the function $u(x) = x^3 - 3x + 1$ on the interval $[0, 5]$.
- Differentiate the following functions:
 - $u(x) = 2^{1-x^3}$
 - $v(x) = x^x$ **Hint: Use $a = e^{\ln a}$ and $\ln(x^b) = b \ln x$**
 - $w(x) = \ln \sqrt[5]{x}$ **Hint: Simplify $w(x)$ first.**
 - $h(x) = \ln \left(\frac{(2x+1)^2}{(3x-1)^4} \right)$ **Hint: Simplify $h(x)$ first.**
 - $u(x) = x \ln(1 + e^x)$
 - $y(x) = \ln(e^{-x} + xe^x)$
 - $h(x) = \ln(\ln x)$
 - $v(x) = (\ln x)^{\cos x}$

4. Evaluate the following limits:

- | | |
|---|--|
| a) $\lim_{x \rightarrow 0} \frac{\sin 3x}{x}$ | f) $\lim_{x \rightarrow \infty} x \tan \left(\frac{1}{x} \right)$ |
| b) $\lim_{x \rightarrow 0} \frac{\cos x - 1}{\sin x}$ | g) $\lim_{x \rightarrow \infty} (x - \ln x)$ |
| c) $\lim_{x \rightarrow 0} \frac{\tan 6x}{\sin 2x}$ | h) $\lim_{x \rightarrow \infty} \left(\frac{2x-3}{2x+5} \right)^{2x+1}$ |
| d) $\lim_{x \rightarrow \infty} x^2 \sin \left(\frac{1}{4x^2} \right)$ | i) $\lim_{x \rightarrow 0} \frac{1 - \cos x}{x^2}$ |
| e) $\lim_{x \rightarrow \infty} \left(1 + \frac{1}{x} \right)^x$ | j) $\lim_{x \rightarrow 1} \frac{\ln x}{\sin \pi x}$ |

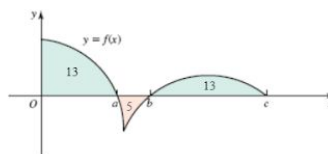
#5 and 6
A and b explain
each step

#7

5.2.59

The figure to the right shows the area of regions bounded by the graph of f and the x -axis. Evaluate the following integral.

$$\int_0^b f(x) dx$$



$$\int_0^b f(x) dx = \boxed{} \text{ (Type an integer or a simplified fraction.)}$$

#8

Please explain each step

Use geometry to evaluate the integral.

$$\int_1^6 |2x - 4| \, dx$$

$$\int_1^6 |2x - 4| \, dx = \boxed{} \text{ (Simplify your answer. Type an integer or a decimal.)}$$