Instructions

Name_____

Section_____

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1. Question Details SCalc8 4.3.007. [3395157]

Use Part 1 of the Fundamental Theorem of Calculus to find the derivative of the function.

$$g(x) = \int_0^x \sqrt{t + t^3}\, dt$$

$g'(x) =$ $\sqrt{x^3 + x}$

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2. Question Details SCalc8 4.3.011. [3353799]

Use Part 1 of the Fundamental Theorem of Calculus to find the derivative of the function.

$$F(x) = \int_x^0 \sqrt{5 + \sec(8t)}\, dt \quad \left[\text{Hint: } \int_x^0 \sqrt{5 + \sec(8t)}\, dt = -\int_0^x \sqrt{5 + \sec(8t)}\, dt\right]$$

$F'(x) =$ $-\sqrt{\sec(8x) + 5}$

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3. Question Details SCalc8 4.3.056. [3354003]

Find the derivative of the function.

$$g(x) = \int_{\tan x}^{2x^2} \frac{1}{\sqrt{5 + t^3}}\, dt$$

$g'(x) =$ $-\frac{\sec^2(x)}{\sqrt{5 + \tan^3(x)}} + \frac{4x}{\sqrt{5 + 8x^6}}$

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4. Question Details SCalc8 4.3.051. [3353715]

What is wrong with the equation?

$$\int_{\pi/3}^{\pi} 5 \sec(\theta) \tan(\theta)\, d\theta = 5 \sec(\theta)\Big]_{\pi/3}^{\pi} = -15$$

- $f(\theta) = 5 \sec(\theta) \tan(\theta)$ is not continuous on the interval $[\pi/3, \pi]$ so FTC2 cannot be applied.
- $f(\theta) = 5 \tan(\theta)$ is not continuous on the interval $[\pi/3, \pi]$ so FTC2 cannot be applied.
- There is nothing wrong with the equation.
- $f(\theta) = 5 \sec(\theta)$ is not continuous at $\theta = \pi/3$ so FTC2 cannot be applied.
- The lower limit is not equal to 0, so FTC2 cannot be applied.

5. Question Details SCalc8 4.4.002. [3353911]

State whether the following is true or false by differentiation.

$$\int \cos^2(x)\,dx = \frac{1}{2}x + \frac{1}{4}\sin(2x) + C$$

- (●) True
- ( ) False

$\cos^2(x) = \frac{1+\cos(2x)}{2} = \frac{1}{2} + \frac{\cos(2x)}{2}$

$\frac{d}{dx}\left(\frac{1}{2}x + \frac{1}{4}\sin(2x) + C\right) = \frac{1}{2} + \frac{\cos(2x)}{2} + 0 = \cos^2(x)$

6. Question Details SCalc8 4.4.008. [3395006]

Find the general indefinite integral. (Use C for the constant of integration.)

$$\int \left(u^7 - 6u^6 - u^4 + \frac{8}{9}\right) du$$

$C + \frac{u^8}{8} - \frac{6u^7}{7} - \frac{u^5}{5} + \frac{8u}{9}$

$\frac{u^{7+1}}{7+1} - \frac{6u^{6+1}}{6+1} - \frac{u^{4+1}}{4+1} + \frac{8}{9}u + C$

$\frac{u^8}{8} - \frac{6u^7}{7} - \frac{u^5}{5} + \frac{8}{9}u + C$

7. Question Details SCalc8 4.4.019. [3353981]

Evaluate the integral.

$$\int_{-2}^{3} (x^2 - 3)\,dx$$

$-\frac{10}{3}$

$\frac{x^3}{3} - 3x \Big|_{-2}^{3}$

$\left[\frac{3^3}{3} - 3(3)\right] - \left[-\frac{8}{3} - (-6)\right]$

$[9 - 9] - \left[-\frac{8}{3} + \frac{18}{3}\right]$

$-\left[\frac{10}{3}\right]$

8. Question Details SCalc8 4.4.025. [3353629]

Evaluate the integral.

$$\int_0^{\pi} (3\sin\theta - 17\cos\theta)\,d\theta$$

6

$-3\cos\theta - 17\sin\theta \Big|_0^{\pi}$

$-3\cos(\pi) - 17\sin(\pi) - (-3\cos(0) - 17\sin(0))$

$3 - 0 - (-3 - 0)$

6

9. Question Details SCalc8 4.4.042. [3353660]

Evaluate the integral.

$$\int_0^{3\pi/2} 4|\sin(x)|\,dx$$

12

$4\left[\int_0^{\pi/2}\sin(x) + \int_{\pi/2}^{\pi}\sin(x)\,dx + \int_{\pi}^{\frac{3\pi}{2}}\sin(x)\,dx\right]$

$-\cos\left(\frac{\pi}{2}\right) + \cos(0)$ $\quad -\cos(\pi)$ $\quad -\cos\left(\frac{3\pi}{2}\right)$

$(0+1) + (1-0) - (-\cos(\pi) + \cos(\frac{3\pi}{2}))$

$4(1 + 1 + 1)$

$4(3) = 12$

Assignment Details

Name (AID): **241 Sections 12 and 13 Week 14 Worksheet**
Submissions Allowed: **5**
Category: **Homework**
Code:
Locked: **No**

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