1. (1 pt) Use part I of the Fundamental Theorem of Calculus to find the derivative of

$$f(x) = \int_5^x \frac{1}{1+t^4}dt$$

$f'(x)$ = _____

Answer(s) submitted:

- `(1/(1+x^4))`

(correct)

2. (1 pt) Use part I of the Fundamental Theorem of Calculus to find the derivative of

$$f(x) = \int_{-2}^x \sqrt{t^3+8}dt$$

$f'(x)$ = _____
[NOTE: Enter a function as your answer. Make sure that your syntax is correct, i.e. remember to put all the necessary (,), etc.]

Answer(s) submitted:

- `sqrt((x^3)+8)`

(correct)

3. (1 pt) If $f(x) = \int_x^{14} t^5 dt$ then
$f'(x)$ = _____

Answer(s) submitted:

-

(incorrect)

4. (1 pt) Use part I of the Fundamental Theorem of Calculus to find the derivative of

$$F(x) = \int_x^2 \sin(t^4)dt$$

$F'(x)$ = _____

[NOTE: Enter a function as your answer.]

Answer(s) submitted:

- `-sin(x^4)`

(correct)

5. (1 pt) Use part I of the Fundamental Theorem of Calculus to find the derivative of

$$y = \int_{-2}^{\sqrt{x}} \frac{\cos t}{t^{12}}dt$$

$\frac{dy}{dx}$ = _____
[NOTE: Enter a function as your answer. Make sure that your syntax is correct, i.e. remember to put all the necessary (,), etc.]

Answer(s) submitted:

- `cos(sqrt(x)) / (2x^(13/2))`

(correct)

6. (1 pt) If $f(x) = \int_{1-2x}^2 \frac{\sin(t)}{1+t^2}dt$, then $f'(x)$ = _____.

Answer(s) submitted:

- `sin(1-2x) / (1-2x+(2x^2))`

(correct)

7. (1 pt) Find the derivative of the following function

$$F(x) = \int_{x^3}^{x^7} (2t-1)^3\,dt$$

using the Fundamental Theorem of Calculus.
$F'(x)$ = _____

Answer(s) submitted:

- `((7x^6)((2x^7 - 1)^3)) - ((3x^2)((2(x^3)-1)^3))`

(correct)

8. (1 pt) Find the derivative of

$$g(x) = \int_{2x}^{8x} \frac{u+8}{u-4}du$$

_____

Answer(s) submitted:

- `(-2(2x+8)/(2x-4)) + (8(8x+8)/(8x-4))`

(correct)

9. (1 pt) Use part I of the Fundamental Theorem of Calculus to find the derivative of

$$y = \int_{\cos x}^{2x} \cos u^6 du$$

$\frac{dy}{dx}$ = _____
[NOTE: Enter a function as your answer. Make sure that your syntax is correct, i.e. remember to put all the necessary (,), etc.]

Answer(s) submitted:

- `((sin(x)cos((cos(x))^6))) + (2cos((2x)^6))`

(correct)

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10. (1 pt) If $f(x) = \int_0^x (t^3 + 7t^2 + 7)\,dt$

then
$f''(x) =$ _____

Answer(s) submitted:

- `(3(x^2)) + (14x)`

(correct)

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11. (1 pt) Find the average value of $f(x) = x^2$ on the interval $[3,4]$.

Answer: _____

Answer(s) submitted:

- `37/3`

(correct)

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12. (1 pt) Find the average value of : $f(x) = 5\sin x + 6\cos x$ on the interval $[0, 16\pi/6]$

Average value = _____

Answer(s) submitted:

- `1.516`

(correct)

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13. (1 pt) (a) Find the average value of $f(x) = 25 - x^2$ on the interval $[0,1]$.

Answer: _____

(b) Find a value c in the interval $[0,1]$ such that $f(c)$ is equal to the average value.

Answer: _____

Answer(s) submitted:

- `74/3`
- `sqrt(1/3)`

(correct)

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14. (1 pt) A car drives down a road in such a way that its velocity (in m/s) at time t (seconds) is

$$v(t) = 2t^{1/2} + 1$$

.
Find the car's average velocity (in m/s) between $t = 4$ and $t = 7$.

_____

Answer(s) submitted:

- `5.68`

(correct)