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QUESTION 1

(1 pts)

Evaluate the general indefinite integral:  $\int \sqrt{x^5} dx$

A.  $\frac{1}{6}x^6 + C$

C.  $\frac{5}{2}x^{2/5} + C$

B.  $\frac{2}{3}x^{3/2} + C$

D.  $\frac{2}{7}x^{7/2} + C$

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QUESTION 2

(1 pts)

Evaluate the definite integral:  $\int_1^4 \sqrt{x^5} dx$

A.  $\frac{254}{7}$

C.  $-\frac{1365}{2}$

B.  $\frac{1365}{2}$

D.  $-\frac{254}{7}$

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QUESTION 3

(1 pts)

Evaluate  $\int_1^2 x^2 + 2x + 3 dx$

A. 2

C.  $\frac{22}{3}$

B.  $\frac{25}{3}$

D.  $\frac{2}{3}$

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QUESTION 4

(1 pts)

Suppose you are given that  $g(x) = \int_x^0 1 + t^2 dt$ .

How can you rewrite the above integral, so that you can use the Fundamental Theorem of Calculus part 1 to compute  $g'(x)$ ?

A. We can't use the theorem here.

C.  $-\int_0^x 1 + t^2 dt$

B.  $\int_0^x 1 + t^2 dt$

D.  $\int_x^0 1 + t^2 dt = \frac{x^3}{3} + x$

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QUESTION 5

(1 pts)

What does the Net Change Theorem mean in words?

A. If  $F(x) = \int_a^b f(x) dx$ , then  $\int_a^b f(x) dx$  is equal to  $F(b) - F(a)$ .

C. The integral of the rate of change is equal to the net change.

B. If  $g'(x)$  is the antiderivative of  $f(x)$ , then  $g'(x) = f(x)$ .

D. The integral of the net change is equal to the rate of change.

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QUESTION 6

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(1 pts)

When can you use the substitution rule?

- A. When The Fundamental Theorem of Calculus is not valid.
- B. Only on a definite integral.
- C. Only on an indefinite integral.
- D. When you have a function,  $g(x)$ , and its derivative,  $g'(x)$  present in the integrand.

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QUESTION 7

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(1 pts)

Suppose you want to use  $u$ -substitution to evaluate,  $\int 2x(x^2 + 2)^2 dx$ . Identify the function  $u$ .

- A.  $u = 2x$
- B.  $u = x^2 + 2$
- C.  $u = (x^2 + 2)^2$
- D. Cannot use  $u$ -substitution.

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QUESTION 8

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(1 pts)

Rewrite the integral in question 7 after doing  $u$ -substitution.

- A.  $\int u^2 du$
- B.  $\int u^2 dx$
- C.  $\int 4x^2 du$
- D.  $\int 4x^2 dx$

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QUESTION 9

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(1 pts)

Again, suppose you want to use  $u$ -substitution to evaluate,  $\int (2x^3 + 1)^7 (2x^2) dx$ . Identify the function  $u$ .

- A. Cannot use  $u$ -substitution.
- B.  $u = 2x^3 + 1$
- C.  $2x^2$
- D.  $u = (2x^3 + 1)^7$

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QUESTION 10

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(1 pts)

Rewrite the integral in question 9 after doing  $u$ -substitution.

- A.  $\int u^7 du$
- B.  $\frac{1}{3} \int u^7 dx$
- C.  $\int u^7 (2x^2) du$
- D.  $\frac{1}{3} \int u^7 du$