MATH-241 Calculus I Homework 11	Created by Rukiyah Walker Spring 2023
QUESTION 1 What is Newton's Method used for?	(1 pts)
A. Finding the derivative of a polynomial of degree 5 or higher. B. To show that a derivative exists.	 C. To show that lim_{n→∞} x_n exists. D. Finding an approximation of the root(s) of a function.
When might Newton's Method fail?	(1 pts)
A. When $f'(x)$ is close to 0.	C. When $\lim_{x\to\infty} f(x) = 0$.
B. When $f(x) = f'(x)$.	D. When $x_{n+1} = x_n$.
How can you still use Newton's Method after it fails?	(1 pts)
A. Set $f(x) = 0$.	C. Choose a better initial approximation, x_1 .
B. Use a different method.	D. Set $x_{n+1} = x_n$.
Newton's Method says the next approximation is given the n th approximation and $f'(x_n) \neq 0$. If the number r as n becomes large, we say that the sequence in terms of limits?	ers x_n become closer and closer to some
A. $\lim_{x\to\infty} n = r$	C. $\lim_{x\to\infty} x = r$
—	5 . 1.

D. $\lim_{r\to\infty} x_n = \infty$

A function F is called an antiderivative of f on an interval I if F'(x) = f(x) for all x in I. What does this mean?

A. F is a function whose derivative is equal to the original function f.

B. $\lim_{x\to\infty} F'(x) = f(x)$

B. $\lim_{n\to\infty} x_n = r$

C. There exists only one antiderivative for f(x).

D. $\lim_{x\to\infty} f(x) = F'(x)$

What is the general antiderivative of $f(x) = x^n$?

A.
$$F(x) = \frac{x^{n+1}}{n+1}$$

C.
$$F(x) = \frac{x^{n+1}}{n+1} + C$$

B.
$$F(x) = \frac{(n+1)x}{n+1} + C$$

D.
$$F(x) = \frac{(n+1)x}{n+1}$$

Which of the following is NOT an example of an antiderivative of the function $f(x) = x^2 + x$?

A.
$$F(x) = \frac{x^3}{3} + \frac{x^2}{2} + C$$

C.
$$F(x) = \frac{x^3}{3} + \frac{x^2}{2} + 100$$

B.
$$F(x) = \frac{x^3}{3} + \frac{x^2}{2} + 2$$

D.
$$F(x) = \frac{x^3}{3} + \frac{x^2}{2} + 2x$$

QUESTION 8

(1 pts)

Find the antiderivative of $f(x) = x^2 + 2x$ given F(0) = 1.

A.
$$F(x) = \frac{x^3}{3} + x^2$$

C.
$$F(x) = \frac{x^3}{3} + \frac{x}{2}$$

B.
$$F(x) = \frac{x^3}{3} + x^2 + 1$$
.

D.
$$F(x) = 1$$

(1 pts)

Guestion 9 Find the antiderivative of $f(x) = \frac{2x^3 + \sqrt{x}}{x}$ given F(1) = 2.

A.
$$F(x) = \frac{2}{3}x^3 + 2x^{1/2} - \frac{8}{3}$$

C.
$$F(x) = \frac{x^3}{3} + 2x^{1/2}$$

B.
$$F(x) = \frac{8}{3}$$

D.
$$F(x) = \frac{2}{3}x^3 + 2x^{1/2}$$

How can we approximate the area of the region S which lies under the curve $y = x^2$? (1 pts)

- A. Take the derivative of $y = x^2$.
- B. Use the height of the function (h) and length of the interval (l), then A = hl.
- C. Divide the interval into a bunch of subintervals (rectangles) of equal length then take the sum of the areas of the rectangles.
- D. Use newton's method.

