AB Calculus Quiz #13 NC Integration Stuff

Dr. Wisniewski Spring 2020

Name Salution

Period ______3

Instructions: Solve each of the problems below. Please show your work (for partial credit) and box or circle your answers. A calculator is NOT permitted on this portion of the quiz.

1. (2 Pts) Let
$$f(x) = \int_{-5}^{x^2} \frac{1}{t^2+1} dt$$
. Find $f'(2)$.

2. (4 Pts) Find the average value of the function $f(x) = 16 - x^2$ on [-4, 4]. Find at least one value of x, call it x = c, for which f(c) = the average value.

$$F = \frac{1}{4 - (-4)} \left[\frac{1}{(16 - x^2)} dx = \frac{2}{5} \left[\frac{1}{(16 - x^2)} dx = \frac{1}{4} \left[\frac{1}{(16 - x^2)} dx = \frac{2}{3} \right] \right]$$

$$= \frac{1}{4} \left[\frac{1}{(164 - x^2)} dx = \frac{2}{3} \left[\frac{1}{(1 - x^2)} dx = \frac{1}{4} \left[\frac{1}{(1 - x^2)} dx = \frac{2}{3} \right] \right]$$

$$= \frac{1}{4} \left[\frac{1}{(164 - x^2)} dx = \frac{2}{3} \left[\frac{1}{(1 - x^2)} dx = \frac{1}{3} \left[\frac{1}{(1 - x^2)} dx = \frac{2}{3} \right] \right]$$

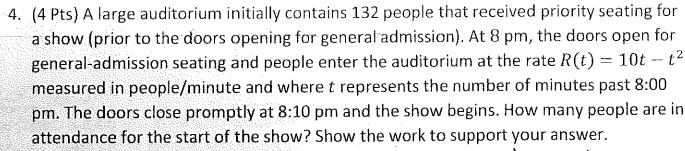
3. (2 Pts) The average value of a continuous function f(x) on [3, 7] is 12. What is the value

of
$$\int_{3}^{3} f(x)dx$$
?

$$\vec{F} = 12 = \frac{1}{7-3} \int_{3}^{3} f(x)dx = \frac{1}{7} \int_{3}^{7} f(x)dx$$

$$12 = \frac{1}{4} \int_{3}^{7} f(x)dx \quad \text{mult both sides by 4}$$

$$\sqrt{48} = \int_{3}^{7} f(x)dx$$



Let N(t)=#. F people in and at how t where E represents the time since 8 pm.

$$N(10) = 132 + [500 - 1000] = 132 + \frac{1500 - 1000}{3} = 132 + \frac{500}{3}$$

a.
$$\int \frac{x^2 + 5x - 1}{x} dx = \int (x + 5 - \frac{1}{x}) dx$$

$$= \int \frac{x^2 + 5x - 1}{x} dx = \int (x + 5 - \frac{1}{x}) dx$$

$$= \int \frac{x^2 + 5x - 2x}{x} dx = \int (x + 5x) dx$$

$$= \int \frac{x^2 + 5x - 2x}{x} dx = \int (x + 5x) dx$$

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b.
$$\frac{d}{dy} \int_{-2}^{8} e^{x} dx = 0$$
 deriv if a konstant = 0

c.
$$\frac{d}{dx} \int_{5}^{x} \ln t \, dt = \int \frac{QnX}{No} No +$$

$$d. \int_{1}^{e^{2}} \frac{1}{x} dx = 2n|X| \Big|_{1}^{e^{2}} = 2n|e^{2}| - 2n|| - 2n|| = -|Z|$$