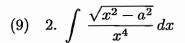
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RECITATION INSTRUCTOR	Page 3	/32
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RECITATION TIME	TOTAL	/100

## DIRECTIONS

- 1. Write your name, 10-digit PUID, recitation instructor's name and recitation time in the space provided above. Also write your name at the top of pages 2, 3, and 4.
- 2. The test has four (4) pages, including this one.
- 3. Write your answers in the boxes provided.
- 4. You must show sufficient work to justify all answers unless otherwise stated in the problem. Correct answers with inconsistent work may not be given credit.
- 5. Credit for each problem is given in parentheses in the left hand margin.
- 6. No books, notes, calculators nor any electronic devices may be used on this test.

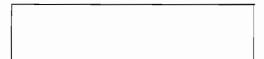
Find the integrals in problems 1-6.

$$(6) \quad 1. \int_0^{\frac{\pi}{4}} \cos^2 x \, dx$$



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(9) 3. 
$$\int \frac{dx}{\sqrt{4 - (x+3)^2}}$$



$$(11) \quad 4. \int \frac{x^2 + 8x - 3}{x^3 + 3x^2} dx$$



$$(9) \quad 5. \int \frac{\cos x}{\sin^2 x + \sin x} \, dx$$



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(6) 6. 
$$\int \frac{x+1}{x^2+9} \, dx$$



(10) 7. Find the area of the region under the curve  $y = \frac{x+1}{x-1}$  from x = 2 to x = 3.



(10) 8. Determine whether the integral below is convergent or divergent. Find its value if it is convergent. <u>Important</u>: You must use the definition of improper integrals.

$$\int_{-\infty}^{0} \frac{1}{2x-5} \, dx$$



(6) 9. Circle T if true or F if false.

(a) 
$$\int_1^\infty \frac{1}{x\sqrt{x}} dx$$
 is divergent

T F

(b) 
$$\int_{-1}^{2} \frac{1}{x^2} dx = -\frac{3}{2}$$

T F

(c) 
$$\int_0^1 \frac{1}{\sqrt{1-x}} dx$$
 is convergent

 $\mathbf{T}$   $\mathbf{F}$