

Fall 2016

Math 129 - 20 Calculus II

Exam # 1, Sections 7.1 - 7.5

Time allowed: 60 minutes

Instructor's Name: Colin Clark

Student's Name (please print): _____

By signing my name below, I agree that I am following all rules and regulations set forth by the Code of Academic Integrity. Furthermore, I agree that I am following all rules set by my instructor and by the course policy for this exam. This includes ensuring that all calculator programs have been deleted.

Signature: _____ Date: _____

1. Use w -substitution to evaluate the definite integral below.

$$\int_1^{\sqrt{2}} x e^{-x^2+1} dx$$

[20 points]

Method: Substitution. Let $w =$ _____, then $dw =$ _____.

$$\int_1^{\sqrt{2}} x e^{-x^2+1} dx = \underline{\hspace{10cm}}$$

2. Evaluate the following integral without using the table.

$$\int_1^e (\ln(t))^2 dt$$

[20 points]

Method: _____ . Then: _____ .

$$\int_1^e (\ln(t))^2 dt = \underline{\hspace{15em}}$$

3. Evaluate the following integral.

$$\int \frac{x^3 - 2x^2 - 4}{x^3 - 2x^2} dx$$

[20 points]

Method: _____. Then: _____.

$$\int \frac{x^3 - 2x^2 - 4}{x^3 - 2x^2} dx = \underline{\hspace{10cm}}$$

4. Calculate

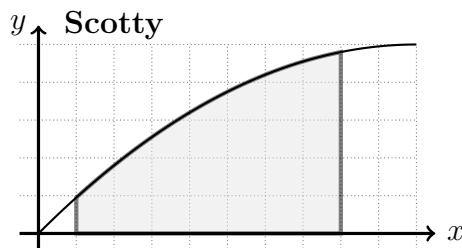
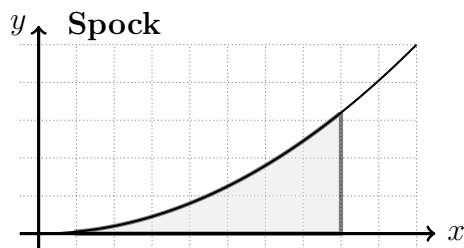
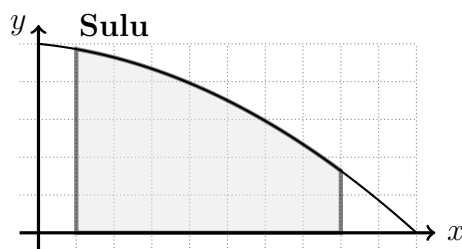
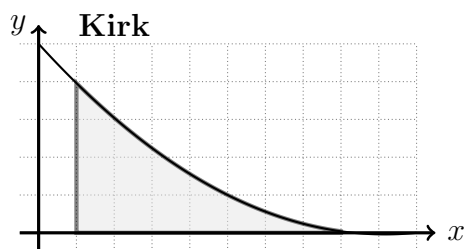
$$\int \frac{y^2}{(4 + y^2)^2} dy$$

[20 points]

Method: _____ . Then: _____ .

$$\int \frac{y^2}{(4 + y^2)^2} dy = \underline{\hspace{10cm}}$$

5. (a) Kirk, Spock, Sulu and Scotty plot their favourite functions on the figures below, and then use the left, right, trapezoid, and midpoint rules to approximate the regions shown.



Whose results are presented in the table below? _____

Rule	Value
Right	2.56
Trap	3.03
Mid	3.09
Left	3.50

- (b) Uhuru's favorite function is $y = e^{\sqrt{x}}$. Use the midpoint rule with 2 subdivisions to approximate

$$\int_0^8 e^{\sqrt{x}} dx$$

$$\int_0^1 e^{\sqrt{x}} dx \approx \underline{\hspace{15em}}$$

6. Suppose that $f(1) = \sqrt{2}$, $f(4) = 7$, $f'(1) = \pi$, $f'(4) = 3$, and f'' is continuous. Find the value of

$$\int_1^4 x f''(x) dx$$

$$\int_1^4 x f''(x) dx = \underline{\hspace{10cm}}$$

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7. Complete the square and use the table to find

$$\int \frac{2z}{z^2 - 6z + 16} dz$$

[5 points]

$$\int \frac{2z}{z^2 - 6z + 16} dz = \underline{\hspace{10cm}}$$