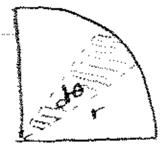
Alyssa White
Ch. 5, #11
Review prob.
Math 1270

Chapter 5 Review Problem:

Q.


$A = \frac{1}{2} r^2 d\theta$

- Name two reasons why that is the correct area.
- ${}_0\int^{x} A(\theta) = B$. Find x and B if you're finding the area of a quarter circle

A. Reason #1: $\frac{d\theta}{2\pi}$ is the fraction that the wedge is for the circle πr^2.

Reason #2: It's similar to a triangle with base equal to $d\theta \cdot r$ and height equal to r. Area, A, for a triangle is $A = \frac{1}{2} b \cdot h$ so $A = \frac{1}{2} \cdot d\theta r \cdot r$

$A = \frac{1}{2} r^2 d\theta$

$x = \frac{\pi}{2}$ for a quarter circle

$$\int_0^{\pi/2} \left(\tfrac{1}{2} r^2 d\theta\right) = \frac{r^2}{2} \int_0^{\pi/2} d\theta$$
$$= \frac{r^2}{2} \cdot \theta \Big|_0^{\pi/2}$$
$$= \frac{\pi}{2} \cdot \frac{r^2}{2} - 0 \cdot \frac{r^2}{2}$$
$$= \boxed{\frac{\pi r^2}{4}} \text{ for a quarter circle}$$

R. This works because it has enough parts to qualify it for an exam, as well as making you think about the situation...

Jesse Lewis
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CH 5 REVIEW PROBLEM

$\boxed{5.5 \quad \#16}$

$$\int_0^1 \frac{x}{\sqrt{1-x^2}}\,dx = ?$$

solution

$u = 1-x^2$; $\frac{du}{dx} = -2x$; $dx = -\frac{1}{2x}du$

limits change :

x	u
0	1
1	0

$\Rightarrow$

$$-\frac{1}{2}\int_1^0 \frac{1}{\sqrt{u}}\,du \Rightarrow \frac{1}{2}\int_0^1 \frac{1}{\sqrt{u}}\,du \Rightarrow \frac{1}{2}\left[2u^{\frac{1}{2}}\right]_0^1 \Rightarrow$$

$$\frac{1}{2}\left(2(1) - 2(0)\right) = \frac{1}{2}(2) = \boxed{1}$$

Mike Harvey
Math 1220

Chapter 5.5

Problems 1→10 in the exercise. I like those because they are things/skills we will actually use + apply. It is giving us building blocks to go off of.

AKASH AGARWAL

Review Problem

SS 5.24

24) $dy/dx = 1/\sqrt{1-x^2}$

$$\int dy = \int \frac{dx}{\sqrt{1-x^2}}$$

$$y = \sin^{-1} x + C$$

Edward Alston

Ch 5 Review

Sectn 5.7 # 21

true or false

a) If $df/dx = dg/dx$ then $f(x) = g(x)$

b) if $d^2f/dx^2 = d^2g/dx^2$ then $f(x) = g(x) + c$

c) if $3 \geq x$ then the derivative of $\int_3^x v(t)\,dt$ is $-v(x)$

d) the derivative of $\int_1^3 v(x)\,dx$ is 0

a) F

b) F

c) F

d) T

a) no garentee that $f(x)$ and $g(x)$ have same start point

b) no garentee that $f(x)$ and $g(x)$ have same start

$df/dx \neq dg/dx$

c) ~~The derivative is irrespective of the function that can only be...~~

The derivative of an integral doesn't care on function value.

d) The derivative of a constant is 0.

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sometimes t df statements adequately show understanding of the materal

James Allen

<u>Ch5 problems</u>

$\boxed{5.7}$

9) $\int_0^2 x^n \, dt$

$= \frac{d}{dx} 2x^n - \frac{d}{dx} 0x^n$

$= 2nx^{n-1}$

easy makes me happy

Evan Robie

Chapter 5 problem

Sect. 5.5 #13

$\int_0^{\frac{\pi}{4}} \tan x \sec^2 x\, dx$ $u = \tan x$ $du = \sec^2 x\, dx$ $dx = \frac{du}{\sec^2 x}$

$a = \tan(0) = 0$
$b = \tan(\frac{\pi}{4}) = 1$ $\int_0^1 u \cancel{\sec^2 x} \frac{du}{\cancel{\sec^2 x}} = \int_0^1 u\, du$

$= \frac{1}{2} u^2 \Big|_0^1 = \frac{1}{2} - 0$

$= \boxed{\frac{1}{2}}$

This problem employs u-substitution, trig, and computing definite integrals. This makes it a great problem that encompasses much of ch. 5.