

## My Chapter 4 Review

1.  $\int \frac{x^2 - x}{\sqrt{x}} dx$  JUST SIMPLIFY!

$$= \int (x^{\frac{3}{2}} - x^{\frac{1}{2}}) dx$$
$$= \frac{2}{5} x^{\frac{5}{2}} - \frac{2}{3} x^{\frac{3}{2}} + C$$

2. If  $f(x) = 2 + g(x)$  for  $-1 \leq x \leq 1$ , then what is the value of  $\int_{-1}^1 [f(x) - g(x)] dx$ ?

$$= \int_{-1}^1 [2 + g(x) - g(x)] dx$$

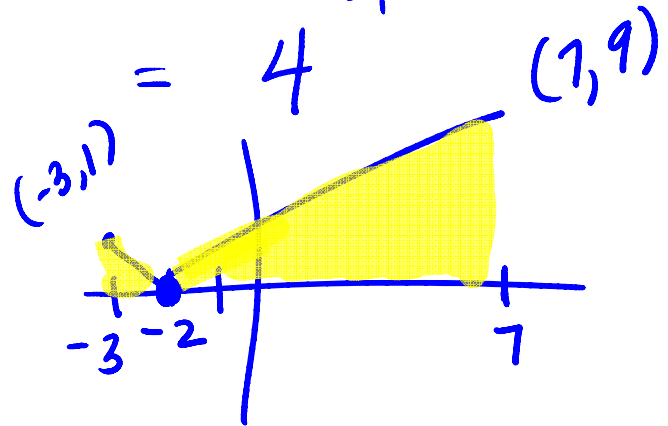
$$= \int_{-1}^1 2 dx = 2x \Big|_{-1}^1$$

$$= 4$$

3.  $\int_{-3}^7 |x + 2| dx$

$$= \frac{1}{2} + \frac{81}{2}$$

$$= 41$$



4. If  $f(x) = \int_3^{\tan x} (1-t^2) dt$ , then  $f'(x) = ?$

$$f'(x) = (1 - \tan^2 x) \frac{d}{dx} \tan x$$
$$f'(x) = \sec^2 x (1 - \tan^2 x)$$

5.  $\int \sec(3\theta) \tan(3\theta) d\theta$

$$= \frac{1}{3} \int \sec u \tan u du \left\{ \begin{array}{l} u = 3\theta \\ du = 3 d\theta \\ \frac{1}{3} du = d\theta \end{array} \right.$$
$$= \frac{1}{3} \sec u + C$$
$$= \frac{1}{3} \sec(3\theta) + C$$

6. If  $\int_1^c \frac{1}{x^2} dx = \frac{1}{2}$ , then  $c =$

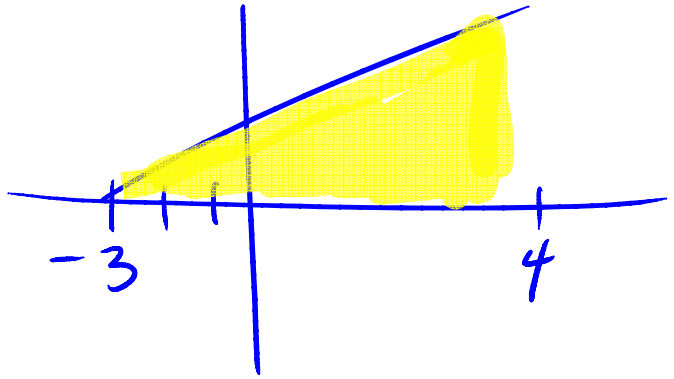
$$\int_1^c x^{-2} dx = -\frac{1}{x} \Big|_1^c$$
$$\frac{1}{2} = -\frac{1}{c} - \left(-\frac{1}{1}\right)$$
$$-\frac{1}{2} = -\frac{1}{c}$$

Hence,  
 $c = 2$

$$7. \int_{-3}^4 |x+3| dx$$

$$= \frac{1}{2}(7)(7)$$

$$= \frac{49}{2}$$



Stuff I should be good at:

Riemann Sums [given a table of values]

Trapezoidal Approximation [given a table of values]

Definite and Indefinite Integrals

Know the rules of Integration

Knowing when to simplify or to use u-sub when integrating

First FTC and Second FTC

Average value AND average rate

All of the problems from the three handouts

Using your calculator to find a definite integral