**Integration**

This can be seen as the anti derivatives of something.

Take a look at the power rule of differentiation:

You’ll see that the power rule for integration will be

If we find the derivative of , it will be

Now, if we find the integral of , we will have

1: Find the anti derivative of

1. Answer:

2. Answer:

3. Answer:

2. Find the integral of 4

3. Find Answer:

**DEFINITE INTEGRALS**

The process by which we evaluate the anti derivatives comes from thew fundamental theorem of calculus.

A function represented with f(x) – small f – while the anti-derivative F(x) – capital F –

One of the theorems says, the integral from a to b of a function f(x) where this function is continuous on a closed interval [a, b] is given below.

You should note that

Example 7:

# The c will cancel out

**METHODS OF SOLVING INTEGRATION**

1. Direct method

2. Substitution method

3. Integration by Parts

4. Integration by Partial Fractions

5. Integration by trigonometry

**METHOD OF SUBSTITUTION**

Given this

We can say, let

Making the subject of the formula,

Looking at another example,

Let

Solve

Answer:

Using the u substitution

Typically you want to make “u” the stuff that is more complicated.

When using the substitution method, you want to make eliminate every value of x when you are substituting the u

Answer:

Answer:

Answer:

Answer:

Let u = sin (x). Answer:

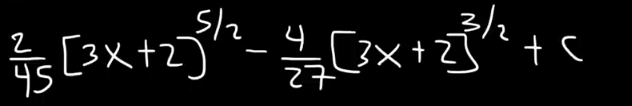
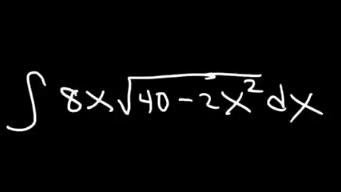
Answer:

Let u = 3x + 2

If you do it the normal way, you’ll see that you’ll get a value like

And the value 3 won’t be able to cancel out the outstanding x.

So in this situation where it both expressions, they have the same power. That is in x and {3x + 2}, you’ll have to solve for x



**EXPONENTIAL INTEGRATION**

Recall that, given a function

For the anti-derivatives,

.

This applies if and only if the function f(x) is a linear function like ax+b or something.

For example

**INTEGRATION TO THE FORM**

Example

Proving it by the method of substitution

Let

But

When you don’t know what to do again, just use integration by parts. Don’t follow me oh :-)