## Trigonometric Integration

While working in a group make sure you:

- Expect to make mistakes but be sure to reflect/learn from them!
- Are civil and are aware of your impact on others.
- Assume and engage with the strongest argument while assuming best intent.

1. Find:

 $\int \cos^3(x) \sin^4(x) \, dx$ 

2. Recall the Pythagorean Theorem (the trigonometric version of  $a^2 + b^2 = c^2$ )

$$\sin^2(x) + \cos^2(x) = 1.$$

- (a) Use the above theorem to write down a relationship between tan(x) & sec(x).
- (b) Use the above theorem to write down a relationship between  $\cot(x)$  and  $\csc(x)$ .
- 3. Consider the strategy we developed to integrate expressions with sines and cosines. Try and develop a parallel strategy when working the following examples:

$$\int \tan^6(y) \sec^4(y) \, dy \qquad \qquad \int \tan^4(x) \, dx$$

$$\int \tan(\theta) \sec^4(\theta) \, d\theta$$

- 4. Record your strategy by finishing the following sentences: Given ∫ tan<sup>m</sup>(x) sec<sup>n</sup>(x) dx,
  (a) if n is even...
  - (b) if m is odd...