Math 172 | Quiz 5 | Name: _____

24 May 2016 | Show Appropriate Work | Point Values in $\boxed{\text{boxes}}$.

1. $\boxed{3}$ Integrate.

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

2. $\boxed{3}$ In class on Monday we discussed that for integrals involving $\sec^n \theta \tan^m \theta$ we can use the substitution $u = \sec\theta$ or $u = \tan\theta$ for many of them.

   (a) If $u = \sec\theta$ what is du?

   (b) If $u = \tan\theta$ what is du?

   (c) Using the appropriate substitution from above, integrate the following.

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

Continued on the other side.

3. $\boxed{4}$ For each of the integrals below, choose an appropriate trigonometric substitution, compute the corresponding 'dx' term, and draw the associated triangle - please label all three sides. **Do not integrate.**

$$\int \sqrt{9+x^2}\,dx$$

(a) The appropriate trigonometric substitution.

(b) The corresponding 'dx' term.

(c) The associated triangle.

$$\int \sqrt{4x^2-1}\,dx$$

(a) The appropriate trigonometric substitution.

(b) The corresponding 'dx' term.

(c) The associated triangle.