7.4 Trig Substitution
Group Work Target Practice

Evaluate each of the following integrals in groups of two or three.

1. Use a trig substitution to transform the integral $\int \sqrt{4 + x^2}\, dx$. Completely reduce the integrand, but **do not integrate**. What I want you to show me...

   (a) What trig sub should you use? What is x and dx?

   (b) Sketch the triangle with the sides filled in.

   (c) Convert the integral to one with θ and simplify but do not integrate.

2. To compute $\int \dfrac{x^2}{\sqrt{1 - x^2}}\, dx$

   (a) What trig substitution should you use? What is x and dx?

   (b) Sketch the triangle with the sides filled in.

   (c) Convert the integral to one with θ and simplify.

   (d) Use the half angle formula (to convert something we can't integrate into something we can)

   (e) Integrate

   (f) Use the double angle formula to eliminate a double angle (because otherwise we can't convert back to x)

   (g) What conversion formulas will you need to get back to x?

   (h) Apply these...