DoNow

1. Without a calculator give a good approximation for $\sqrt[5]{29}$ by "walking out on a tangent."
   (a) Why do you think your approximation is good?
   (b) Without looking at a better approximation (e.g. a calculator value), is your approximation *greater than* or *less than* the actual value? Explain why you are correct.
2. Find the average value of $\cos(x)$ on the closed interval $[0, \pi/2]$. Explain.
3. Assume you don't know that $\sin'(x) = \cos(x)$. Demonstrate how to use a difference quotient to compute $\sin'(0)$ (without going for the more general $\sin'(x)$).

Area Functions (from Friday)

Recall that *area* is a geometric concept. Think geometry!

4. Let $F(x) = \int_0^x f(t)\,dt$, $G(x) = \int_1^x f(t)\,dt$, and $H(x) = \int_{-2}^x f(t)\,dt$.
   (a) Suppose $f(x) = 1$.
      i. Sketch a graph of $f(x)$.
      ii. Find equations for $F(x)$, $G(x)$, and $H(x)$ that do not use an integral sign.
   (b) Suppose $f(x) = 3x$.
      i. Sketch a graph of $f(x)$.
      ii. Find equations for $F(x)$, $G(x)$, and $H(x)$ that do not use an integral sign.
   (c) Suppose $f(x) = 3x + 1$.
      i. Sketch a graph of $f(x)$.
      ii. Find equations for $F(x)$, $G(x)$, and $H(x)$ that do not use an integral sign. [Hint: Use parts (a) and (b).]
5. Let $F(x) = \int_a^x f(t)\,dt$ and $G(x) = \int_b^x f(t)\,dt$, where a and b are constants, and f is a continuous function.

   Use properties of definite integrals to show that $G(x) = F(x) + C$ where C is a constant.