

PRINT Your Name: \_\_\_\_\_

**Quiz 1 — August 25, 2015**

**Remove everything from your desk except this page and a pencil or pen.**

The solution will be posted soon after the quiz is given.

**Circle** your answer. **Show your work.** Your work must be correct and coherent. **Check your answer.**

Find  $\int \frac{z^2}{\sqrt[3]{1+z^3}} dz$ .

**Answer:** Let  $u = 1 + z^3$ . Then  $du = 3z^2 dz$ . The integral is equal to

$$\frac{1}{3} \int u^{-1/3} du = \frac{1}{3} \frac{3}{2} u^{2/3} + C = \boxed{\frac{1}{2}(1+z^3)^{2/3} + C}.$$

**Check:** The derivative of the proposed answer is

$$\frac{2}{3} \frac{1}{2} (1+z^3)^{-1/3} 3z^2 = (1+z^3)^{-1/3}. \checkmark$$