San José State University
Fall 2015
Math-8: College Algebra
Section 03: MW noon–1:15pm
Section 05: MW 4:30–5:45pm

Quiz #15 (Take-home)

1. Assume that we know the following:

$$\begin{aligned} \log_b 2 &= 0.43068 \\ \log_b 7 &= 1.20906 \end{aligned}$$

a. Without determining b, what is $\log_b 28$?

b. What is b?

2. Solve for x:

$$\log_2(2x) + \log_2(x-3) = 3$$

3. Derive the change-of-base formula:

$$\log_b x = \frac{log_a x}{log_a b}$$

4. In class we talked about carbon dating and noted that the equation typically used:

$$y = \frac{1}{10^{12}} e^{-\frac{t}{8223}}$$

is slightly different than the normal half-life-based equation:

$$y = \frac{1}{10^{12}} \left(\frac{1}{2}\right)^{\frac{t}{5700}}$$

where 5700 years is the half-life of C_{14}. Show that these two equations are equivalent.