

Math 273 - Fall 2016

Homework 1

Due September 6, 2016

I must study politics and war that my sons may have liberty to study mathematics and philosophy.

—John Adams

Turn in:

1. Find an expression for a cubic function f if $f(1) = 6$ and $f(-1) = f(0) = f(2) = 0$.

2 Some of the highest tides in the world occur in the Bay of Fundy on the Atlantic Coast of Canada. The water depth at low tide is about 2.0 m and at high tide it is about 12.0 m. The natural period of oscillation is 12 hours and on June 30, 2009 high tide occurred at 6:45 AM. Find a function of the form $D(t) = a \cos(bt + c) + d$ that models the water depth $D(t)$ (in meters) as a function of time t (in hours after midnight) on that day.

3. Let $f(x) = 2x^2 + 5$ and $g(x) = x - 3$.

a. What is $f(g(x))$?

b. What is $g(f(x))$?

4. What is the domain of

$$\frac{\sqrt{x+2} + \sqrt{1-x}}{\sin(\pi x)} \quad ?$$

5. Use the rules for exponents to rewrite and simplify each expression.

a. $b^8(2b)^4$

b. $\frac{(6y^3)^4}{2y^5}$

From the textbook: 2.2.19, 2.2.47.

Recommended: (not to turn in) Chapter 1 review true/false quiz 1-14 and 2.2.15, 2.2.17.