

**MATH 2200**  
**ALGEBRA/TRIG REVIEW**

**Problem 1:** Simplify:

- (1)  $\frac{(2x^2)^{-3}}{(-x)^{-2}}$
- (2)  $\frac{4}{x+3} - \frac{x}{x-3} - \frac{18}{x^2-9}$
- (3)  $1 - \frac{3}{3 - \frac{1}{2y}}$
- (4)  $\left(\frac{1}{16}\right)^{-1/2}$
- (5)  $(2x-1)^3$

**Problem 2:** Find all the solutions to the following equations:

- (1)  $\sqrt{4x+13} - 2x = -1$
- (2)  $|3-x| > 10$
- (3)  $1 + \frac{3}{x} = \frac{4}{x^2}$
- (4)  $x^2 + 6x = 16$

**Problem 3:** (a) Write down  $\sin x$ ,  $\cos x$ , and  $\tan x$  for  $x = 0, \pm\pi/6, \pm\pi/4, \pm\pi/3, \pm\pi/2, \pm 2\pi/3, \pm 3\pi/4, \pm 5\pi/6, \pm\pi$ . (Draw these things on the unit circle.)

(b) Find all values of  $\theta$  satisfying  $\cos \theta = 1/2$ . Find all values of  $\phi$  satisfying  $\sin \phi = -1$ .

(c) If  $\tan x = -2$  and  $-\pi/2 < x < 0$ , find  $\sin x$  and  $\cos x$ .

(d) A circle has radius 6 cm. Find the area of a sector of this circle whose arc length is 10 cm.

**Problem 4:** Let  $f(x) = x^2$ ,  $g(x) = \sqrt{x+1}$ ,  $h(x) = 1/x$ .

(a) Find the domain and range of  $f$ ,  $g$ , and  $h$ .

(b) Find:  $(f \circ f)(x)$ ,  $(f \circ g)(x)$ ,  $(g \circ f)(x)$ ,  $(h \circ g)(x)$ ,  $(f \circ h)(x)$ .

**Problem 5:** Type in "algebra trig review problems" in your favorite search engine, and do some problems!