

Math153.02

Date:

Name:

Score:

Exam 4 (Sections 6.1 - 6.5)

Part 1: Graph the following trigonometric functions. Include two full periods. State the domain, the range, the maximum, the minimum, the period, and the zeros (i.e. x-intercepts) of each function.

1. $y = \cos 2px$

2. $y = \sin\left(x - \frac{p}{4}\right)$

3. $y = 3 \cos(x + p) - 3$

4. $y = 2 - \sin \frac{2px}{3}$

Part 2: Graph the following trigonometric functions. Include two full periods. State the domain, the range, the period, the vertical asymptotes, and the zeros (i.e. x-intercepts) of each function.

5. $y = \csc x$

6. $y = \sec x$

7. $y = 3 \cot \frac{px}{2}$

8. $y = \tan(x + p)$

Part 3: Describe the relationship between the graphs of f and g .

9. $f(x) = \sin x$
 $g(x) = \sin(x - p)$

10. $f(x) = \cos 2x$
 $g(x) = -\cos 2x$

Part 4: Fuel Consumption

11. The daily consumption C (in gallons) of diesel fuel on a farm is model by

$$c = 30.3 + 21.6 \sin\left(\frac{2pt}{365} + 10.9\right) \text{ where } t \text{ is the time in days, with } t = 1 \text{ corresponding to}$$

January 1.

a. What is the period of the model? Is it what you expected? Explain.

b. Use a graphing utility to graph the model. Use the graph to approximate the time of year when consumption exceeds 40 gallons per day.