

Cuyamaca College

Math 176 Fall 20

Exam 1: Chapters 3, 4

Name: \_\_\_\_\_

Make sure to:

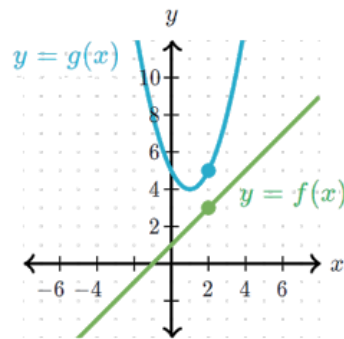
- Show your complete work. Any answer not supported with solution is a wrong answer.
- If applicable, include the units such as 3 meters. The answer 3 without meters written by the number is an incomplete answer.
- Read each question carefully and answer completely.
- Check your answer.
- GOOD LUCK

1. Use function notation to express the weight of a pig in pounds as a function of its age in days d.

2. Given the following graph

a. Evaluate  $f(x) = 3$

b. Solve for  $g(2) =$



3. Find  $f(0) - f(3)$

|      |   |   |   |    |
|------|---|---|---|----|
| x    | 0 | 1 | 2 | 3  |
| f(x) | 1 | 0 | 3 | -4 |

4. Let  $f(t)$  be the number of ducks in a lake  $t$  years after 1990. Explain the meaning of each statement:

a.  $f(5) = 30$

b.  $f(10) = 40$

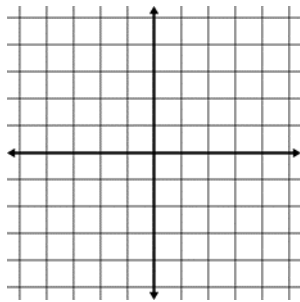
5. For the following exercises, find the domain of each function using interval notation.

$$f(x) = \frac{9}{x-6}$$

$$f(x) = 3\sqrt{x-2}$$

6. Sketch a graph of the piecewise function. Write the domain and range in interval notation.

$$f(x) = \begin{cases} 3, & x < 0 \\ \sqrt{x}, & x \geq 0 \end{cases}$$



7. Using table below, evaluate  $f(g(1))$  and  $g(f(4))$ .

| $x$ | $f(x)$ | $g(x)$ |
|-----|--------|--------|
| 1   | 6      | 3      |
| 2   | 8      | 5      |
| 3   | 3      | 2      |
| 4   | 1      | 7      |

8. Use the functions  $f(x) = 2x^2 + 1$  and  $g(x) = 3x + 5$  to evaluate or find the composite function as indicated.

$$f(g(x))$$

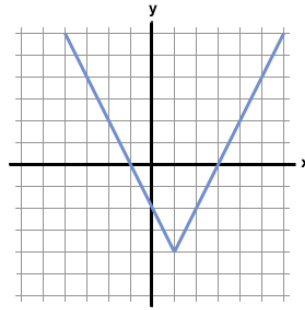
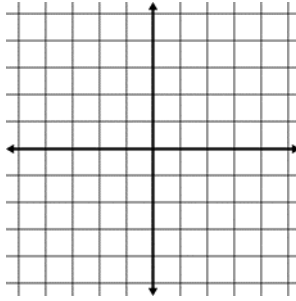
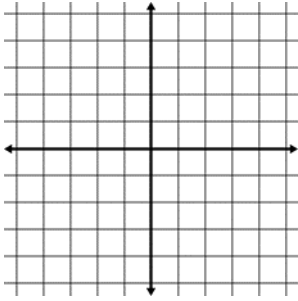
$$g(f(-3))$$

9. For the following exercises, determine whether the function is odd, even, or neither.

$$f(x) = 2x - x^4$$

$$g(x) = \frac{1}{x}$$

10. Sketch  $f(x) = |x|$  ,  $h(x) = -f(x - 2) + 4$  , and find the equation of given graph of function.



11. At the start of a trip, the odometer on a car read 21,395. At the end of the trip, 13.5 hours later, the odometer read 22,125. Assume the scale on the odometer is in miles. What is the average speed the car traveled during this trip?

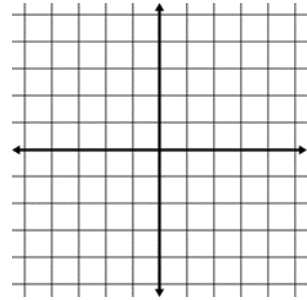
12. Find the  $x$ - and  $y$ -intercepts of the graphs of the function. (You can solve algebraically or by graphing. If you use the graph, show the graph).

$$f(x) = -2|x + 1| + 6$$

13. Use  $f(x) = x^4 - 4$  and  $g(x) = \sqrt[3]{x - 4}$  is  $g = f^{-1}(x)$

14. Find the inverse function. Then, graph the function and its inverse.

$$g(x) = \frac{1}{x-2}$$



15. Determine whether the lines given by the equations below are parallel, perpendicular, or neither.

$$6x - 9y = 10$$

$$3x + 2y = 1$$

16. A clothing business finds there is a linear relationship between the number of shirts,  $n$ , it can sell and the price,  $p$ , it can charge per shirt. In particular, historical data shows that 1,000 shirts can be sold at a price of \$30, while 3,000 shirts can be sold at a price of \$22. Find a linear equation in the form  $P(n) = mn + b$  that gives the price  $P$  they can charge for  $n$  shirts.

17. Write an equation for a line perpendicular to  $h(t) = -2t + 4$  and passing through the point  $(-4, -1)$ .

**18.** A city's population has been growing linearly. In 2008, the population was 28,200. By 2012, the population was 36,800. Assume this trend continues.

- a. Predict the population in 2014.
- b. Identify the year in which the population will reach 54,000

**19.** Table shows the year and the number of people unemployed in a particular city for several years. Determine whether the trend appears linear. If so, and assuming the trend continues, in what year will the number of unemployed reach 5 people?

|                   |      |      |      |      |      |      |      |      |      |      |
|-------------------|------|------|------|------|------|------|------|------|------|------|
| Year              | 1990 | 1992 | 1994 | 1996 | 1998 | 2000 | 2002 | 2004 | 2006 | 2008 |
| Number Unemployed | 750  | 670  | 650  | 605  | 550  | 510  | 460  | 420  | 380  | 320  |

**20.** Write your own question and answer on any subject in chapter 3 and 4. (Extra credit).