1. You are supposed to graph the function $m = C(p)$. Which variable goes on the horizontal axis? Circle one:

   (a) m   (b) C   (c) p

2. If $7 = g(5)$, give the coordinates of a point on the graph of g. (_____, _____)

3. Tuition cost T (in dollars) for part-time students at a college is given by $T = 300 + 200C$, where C represents the number of credits taken.

   a. Find the tuition cost for six credits. Taking six credits costs $_____

   b. How many credits were taken if the tuition was $2,100? $2,100 is the cost of taking _____credits.

4. Suppose $w = f(t)$ is given by the graph to the right. Use the graph to find complete the blanks.

   a. $f(0) = $ ____

   b. $f(\underline{\ }) = 0$
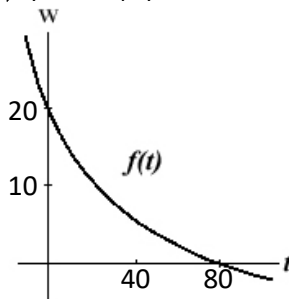
5. The table gives the amount of garbage, G, in tons, produced in a country in year t, so $G= f(t)$ since 1950.

t	G
30	30
40	35
50	40
60	45

   a. Find $f(40)$ and interpret.
   b. Solve $f(t) = 40$ for t and interpret.
   c. Find the average rate of change of the function from 30 to 40. **Report units in your answer**.
   d. Find a formula for $f(t)$ assuming the garbage increases at a steady rate.
   e. Interpret the slope of your formula in practical terms. Don't write RISE over RUN.
   f. Interpret the y-intercept of your formula in practical terms.
   g. Predict the amount of garbage in the year 2050, assuming this trend continues.

6. In 2006, the population of a town was 15,423 and growing by 200 people per year. Find a formula for P, the town's population, in terms of t, the number of years since 2006

7. Determine two intervals on which the average rate of change is the same. Use integers and write a different number in each blank. (Many correct answers are possible.)

   The average rate of change from x = _____ to x = _____ is the same value as the
   the average rate of change x = _____ to x = _____

   or the average rate of change x = _____ to x = _____.
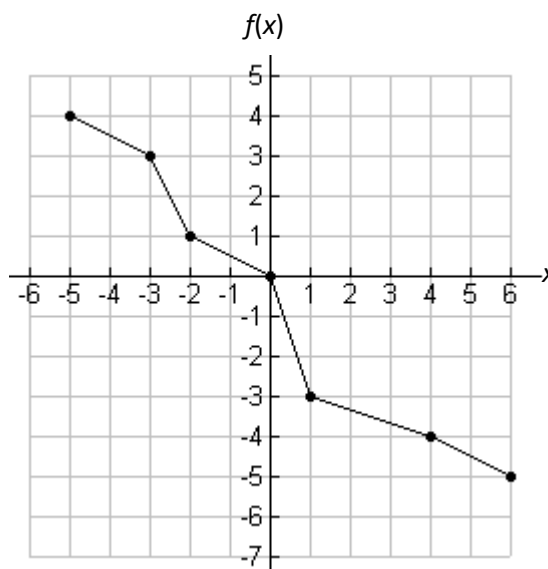
8. If $f(x) = \dfrac{4x}{x^2+4}$, then evaluate $f(-1)$.

9. If $f(x) = \sqrt{16x+4}$, then solve the equation $f(x) = 0$

10. Find the domain and range of the following.

   a. $f(x) = \dfrac{2}{x-3}$ b. $g(x) = \sqrt{x+3}$ c. $h(x) = \sqrt{x-3}$ d. $p(x) = \dfrac{2}{(x-3)^2}$

11. The entire graph of $g(x)$ is shown.
Insert whole numbers (integers) in the boxes.
   a. What is the domain of g?
   b. What is the range of g?
   c. Report all values of x which solve the equation $g(x) = 8$.
   d. Solve $g(x) \geq 8$. Express your answer using inequality or interval notation.
   e. Solve $g(x) < 8$. Express your answer using inequality or interval notation.
   f. For what values of x is the function increasing?

$$\boxed{} < x < \boxed{}$$

12. You need to rent a car and compare the charges of three different companies.

   • Company A charges 5 cents per mile plus 33 dollars per day.
   • Company B charges 44 dollars per day with no mileage charge.
   • Company C charges 15 cents per mile plus 31 dollars per day.

   a. Find formulas for the cost of driving cars rented from companies A, B, and C, in terms of x, the distance driven in miles in one day.
   b. Graph the costs for each company for $0 \leq x \leq 500$. Put all three graphs on the same set of axes. Use this graph to find under what circumstances company A is the cheapest. What about Company B? Company C?

13. You start 122 miles east of Pittsburgh and drive **west** at a constant speed of 43 miles per hour toward the town. (Assume that the road is straight and permits you to do this.) Find a formula for d, your distance east of Pittsburgh as a function of t, the number of hours of travel. (This model will be valid for values of d between 0 and 122 miles east of the town.)

14. In a college meal plan you pay a membership fee; then all your meals are at a fixed price per meal. Suppose 30 meals cost $265 and 60 meals cost $460.

   a. Write a formula for the cost of a meal plan, C, in terms of the number of meals, n.
   b. What is the price per meal?
   c. What is the membership fee?