

2.3 Piecewise Word Problems

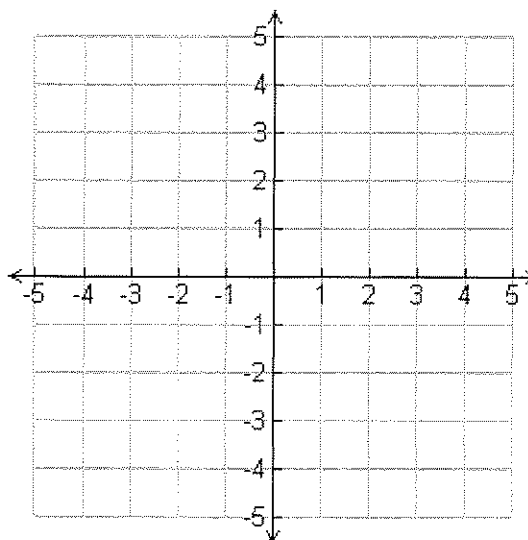
Topics 5

Name: _____

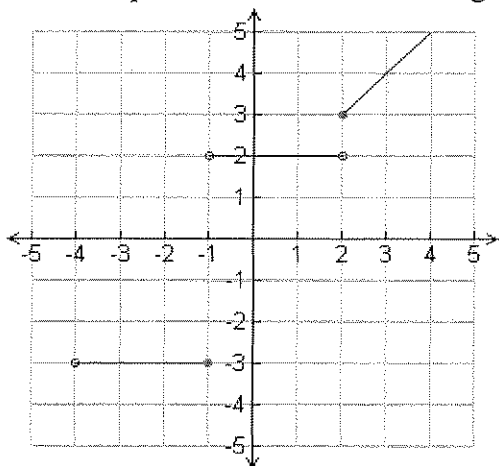
Date: _____ Hour: _____

1. Graph the following function.

$$f(x) = \begin{cases} x+3 & \text{if } x < 0 \\ 5 & \text{if } x = 0 \\ 2x-1 & \text{if } x > 0 \end{cases}$$

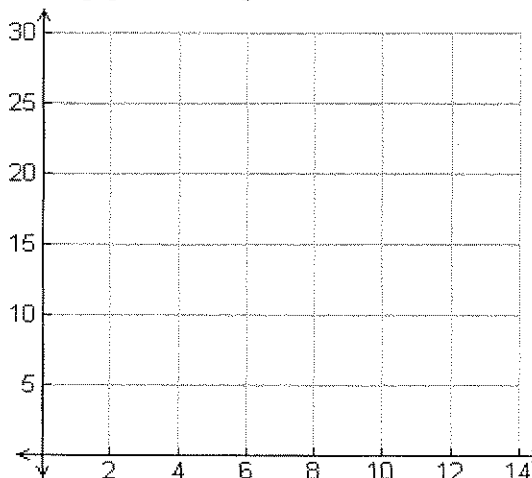


2. Write a piecewise function for the graph.



3. Erin buys gas at a self service station for \$2.75 a gallon. The gas station has a promotion going on that anyone who buys more than 10 gallons of gas, only has to pay \$2.50 per gallon. Erin's tank will hold 12 gallons of gas.

a. Write a rule for the total cost, $C(g)$, as a function of g gallons of gas.



b. Graph the piecewise function.

c. What is the domain and range of the function in part a?

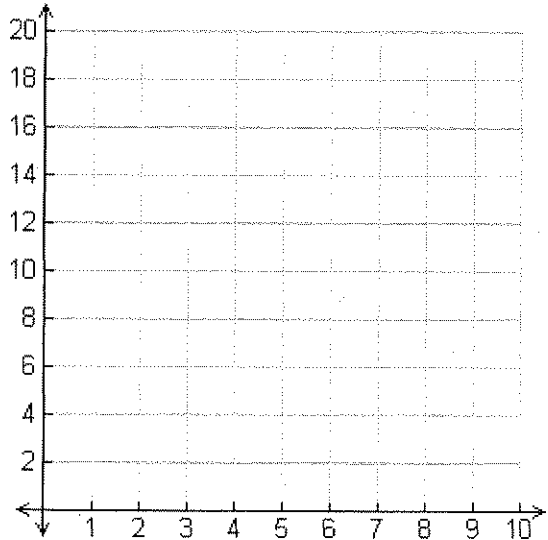
4. A supermarket has a discount on “family packs” of meat. Chicken costs \$2.00/lb for packages over 5 lb. Smaller packages are \$2.50/lb. Express the cost as a function of weight.

a. What are the dependent and control variables?

b. Write the piecewise function $C(w)$.

c. Graph the function. Label your axis.

d. Find $C(3.5)$ and $C(6)$.

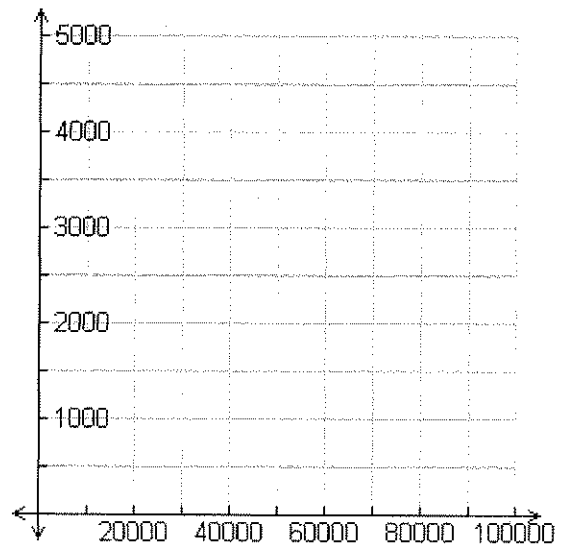


5. The amount of Social Security tax you pay, part of your Federal Insurance Contributions Act deductions, depends on your annual income. As of 1999 you pay 6.2% of your income if it is less than \$72,600. If your income is at least \$72,600, you pay a fixed amount of \$4501.20.

a. What are the control and dependent variables?

b. Write the piecewise function.

c. Graph the piecewise function. Label your axis.



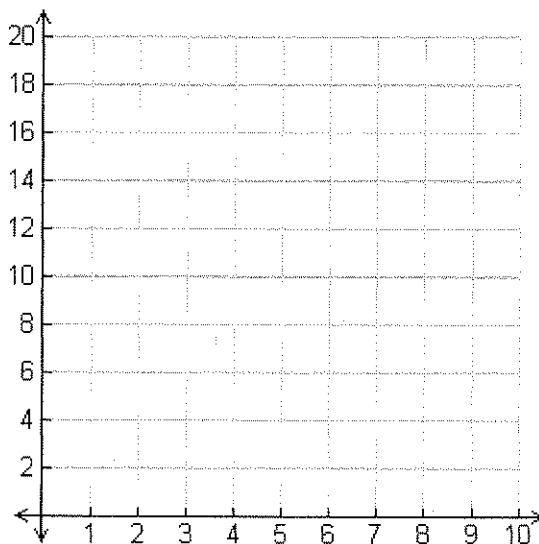
d. If Ms. Howard, made \$33,000 last year, how much did she pay in social security?

6. During a nine-hour snowstorm it snows at a rate of 1 inch per hour for the first two hours, at a rate of 2 inches per hour for the next six hours, and at a rate of 1 inch per hour for the final hour.

a. What are the dependent and control variables?

b. Write the piecewise function.

c. Graph the piecewise function. Label your axis.



d. How much snow is there on the ground after 7 hours?

7. A cell phone company charges \$49.99 a month for up to 500 minutes. If a family talks up to 600 minutes their bill jumps to \$69.99 and if they talk up to 1000 minutes their bill is \$99.99.

a. What are the dependent and control variables?

b. Write a piecewise function.

c. Graph the function. Label your axis.

