**Practice: Piecewise Functions**

**Use the piecewise function f(x) below to answer the following questions:**

$$f(x)\left\{\begin{array}{c}3x, for x<0\\\frac{1}{x}, for 0\leq x<2\\x^{3}, for x\geq 2\end{array}\right.$$

1. Given f(x), what input is not in the domain? Why? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Evaluate $f(4)$ = \_\_\_\_\_\_\_\_\_\_
3. Evaluate $f(-6)$ = \_\_\_\_\_\_\_\_\_\_
4. What is the value of $f(9)$ = \_\_\_\_\_\_\_\_\_\_
5. Find $2f\left(3\right)-f\left(1\right)-3f(2)$ = \_\_\_\_\_\_\_\_\_\_

**A cell phone company sells data based on the piecewise function below where x represents the number of gigabytes of data used and c(x) represents the total monthly bill.**

$$c\left(x\right)\left\{\begin{array}{c}19.95x+60, 0\leq x\leq 3\\9.95x+75, 3<x\leq 6\\125, x>6\end{array}\right.$$

1. What would be the cost of your monthly bill if you used 3 gigabytes of data? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. How much would your bill be if you used 10 gigabytes of data? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. If you used 2 gigabytes of data this month, what was your bill? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Use the piecewise function h(x) below to answer the following questions:**

$$h(x)\left\{\begin{array}{c}2^{x}, x<-3\\\frac{3}{x}, x\geq -3\end{array}\right.$$

1. What is $h\left(-4\right)?$ \_\_\_\_\_\_\_\_\_\_
2. Find $3h\left(1\right)+2h\left(-3\right)-h(-6)$: \_\_\_\_\_\_\_\_\_\_
3. The piecewise function below represents the total cost, *t(x),* to buy *x* shirts from a clothing company.

$$t(x)\left\{\begin{array}{c}15x, 0<x\leq 50\\13.50x, 50<x\leq 75\\12.50x, x>75\end{array}\right.$$

1. If 26 shirts are purchased, what is the cost per shirt? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. If 100 shirts were bought, how much would each shirt cost? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Find the cost of an order with 66 shirts. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. **The Charlotte Shipping Company needs to create an advertisement flyer for its new pricing for medium boxes shipped within Mecklenburg County. In the piecewise function below, *c* represents the cost and *p* represents pounds.**

$$c\left(p\right)=\left\{\begin{array}{c}11.45, p\leq 12\frac{1}{3}\\.72p+5.57, p>12\frac{1}{3}\end{array}\right\}$$

1. How could someone with a fifteen-pound box find the cost of shipping? What would this cost be? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. What would be the price to ship a 10 pound box? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. If someone’s shipping bill was $18.53, did their box weigh more or less than $12\frac{1}{3}$ pounds? How do you know? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ What was the weight of this box? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



1. The parking rates at a garage are shown in the graph below.
	1. What is the fee for parking 2 hours? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	2. How much would it cost to part for ½ hour? \_\_\_\_\_\_\_\_\_\_\_
	3. What is the cost for park 4 ½ hours? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Sarah earns $8 an hour for each hour worked in a week, up to 40 hours. After 40 hours, Sarah earns $12 an hour. Create a piecewise function to represent Sarah’s pay for working x hours in a week.

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1. Graph the piecewise function below by creating tables. Then, identify the domain and range of each step. $\left\{\begin{array}{c}x^{2}-8, x\leq -2\\2x+4, -2<x<3\\-\left|x\right|, 3\leq x\leq 6\end{array}\right.$

**Step 1:**

Domain: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Range: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Step 2:**

Domain: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Range: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Step 3:**

Domain: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Range: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_