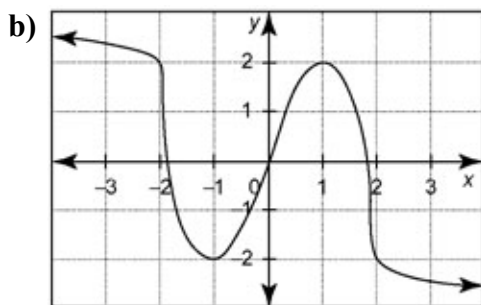
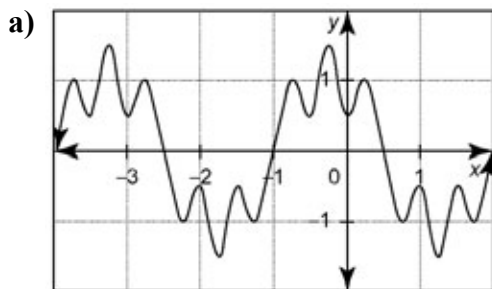
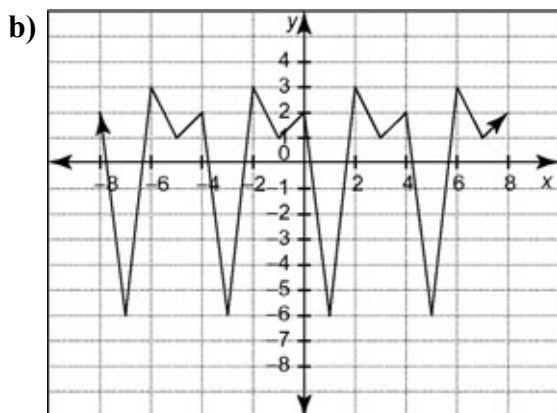
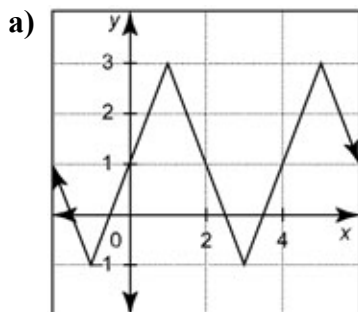


Section 5.1 Periodic Functions

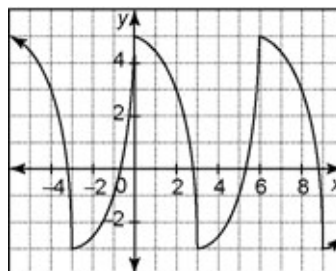
1. Determine if each graph is periodic. Justify your decision.



2. Determine the period, amplitude, domain, and range for each periodic function.

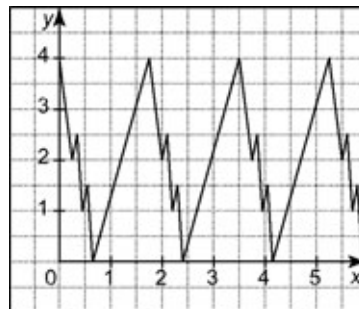


3. $y = f(x)$ is a periodic function.

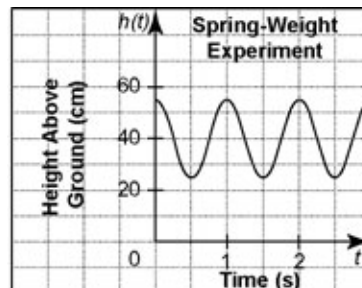


- a) Find the value of $f(-4)$, $f(5)$, and $f(8)$.
b) Find three values of x so $f(x) = 3$.

4. Determine the maximum and minimum values, the amplitude, and the period of the periodic function.



5. A spring is fastened to the bottom of a table, 60 cm above the ground. A weight is attached to the spring and allowed to drop. The graph shows the height above the ground, in centimetres, of the weight over three cycles.



- a) Determine the amplitude and period of this function.
b) Predict how the period and amplitude will change if a heavier weight is used. Justify your reasoning.

Name: _____

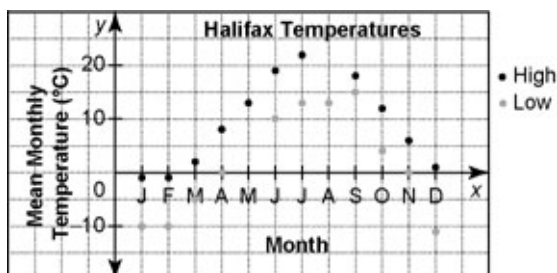
Date: _____

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6. The table shows the mean monthly amounts of rainfall for Vancouver, BC, using data recorded over 30 years.

| Month | Amount of Rainfall (mm) |
|-------|-------------------------|
| Jan | 139 |
| Feb | 114 |
| Mar | 112 |
| Apr | 84 |
| May | 68 |
| Jun | 55 |
| Jul | 40 |
| Aug | 39 |
| Sep | 54 |
| Oct | 113 |
| Nov | 179 |
| Dec | 161 |

- a) Create a scatter plot of the data and draw a curve of best fit.
- b) Does this represent a periodic function? Explain your reasoning.
- c) What are the maximum and minimum amounts of rainfall for Vancouver? In which months do they occur?
7. The graph shows some of the mean monthly high and low temperatures, in degrees Celsius, for Halifax, NS, using data recorded over 15 years.



- a) Predict the average low temperature for May and the average high temperature for August.

- b) Do you think your predictions will be accurate for the upcoming year? Explain your reasoning.

8. The table shows the distance, in metres, from the entrance gate of a person riding on a carousel.

| Time (s) | Distance (m) |
|----------|--------------|
| 0 | 5.0 |
| 1 | 6.6 |
| 2 | 10.6 |
| 3 | 14.6 |
| 4 | 16.2 |
| 5 | 14.6 |
| 6 | 10.6 |
| 7 | 6.6 |
| 8 | 5.0 |

- a) Assume that the data are periodic. Make a scatter plot of the data and extend it to 16 s.
- b) How does the graph show that the data are periodic?