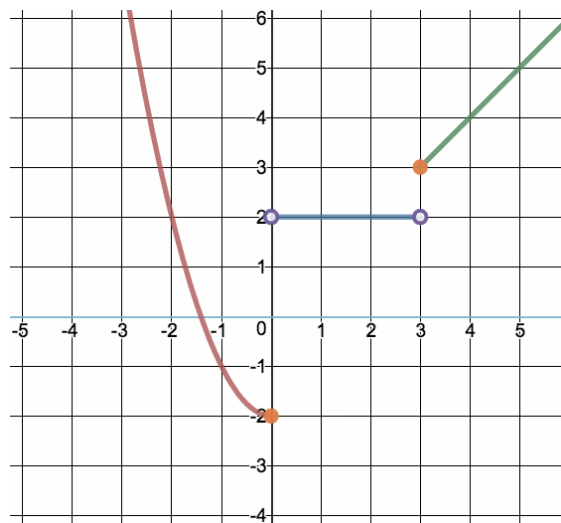


PC 1-2 Investigation and Notes (Part 1 – Piecewise functions)

A **piecewise function** is a function that is graphed in pieces. Each piece is defined for specific x-values. Below is an example of a piecewise function.

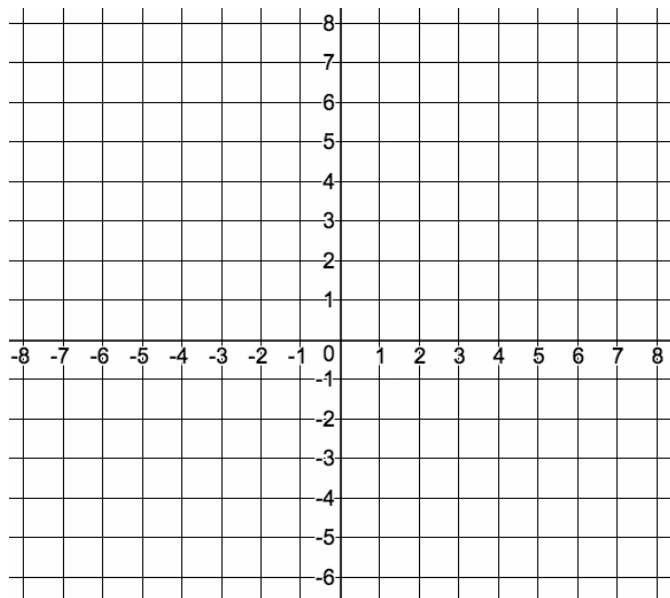
$$f(x) = \begin{cases} x^2 - 2 & \text{if } x \leq 0 \\ 2 & \text{if } 0 < x < 3 \\ x & \text{if } 3 \leq x < \infty \end{cases}$$

The graph of $f(x)$:

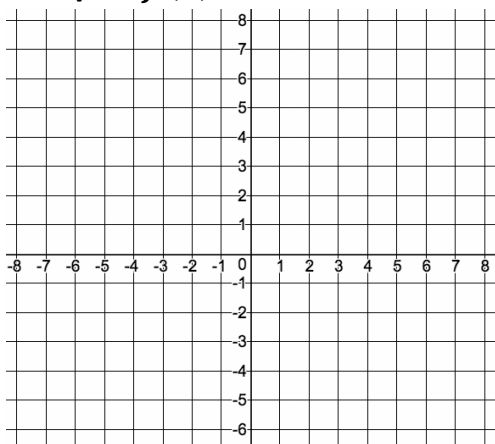


Graph the piecewise function $g(x)$.

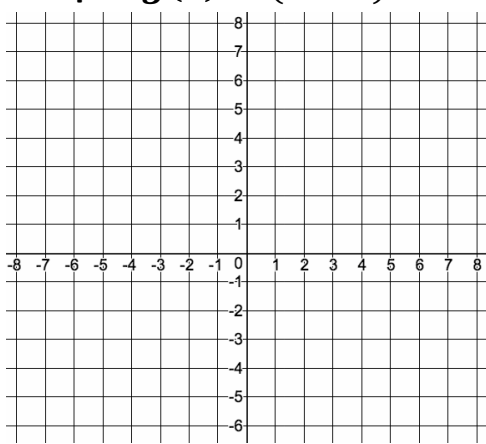
$$g(x) = \begin{cases} (x + 3)^2 + 2 & \text{if } x < -1 \\ 4 & \text{if } -1 \leq x < 2 \\ -\frac{1}{2}x & \text{if } 2 \leq x < \infty \end{cases}$$



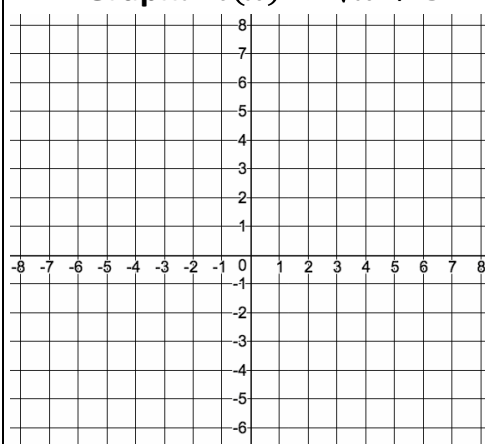
Graph. $f(x) = 2x - 3$



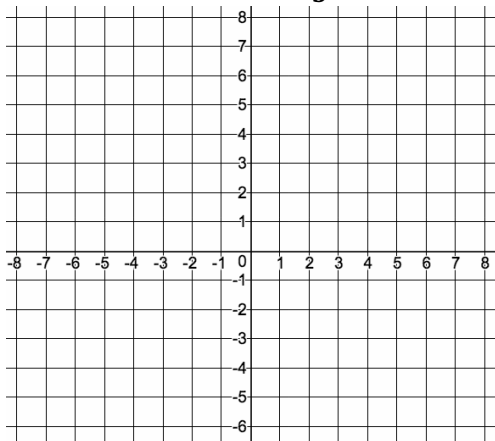
Graph. $g(x) = (x + 4)^2 - 2$



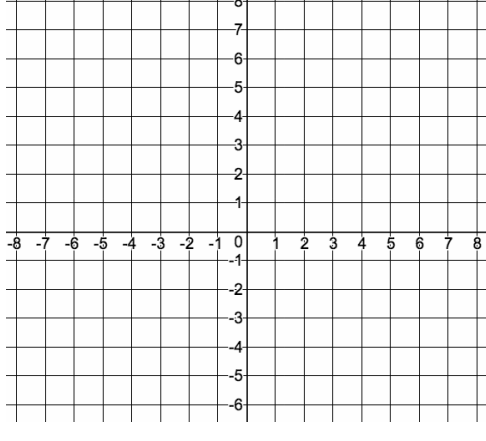
Graph. $h(x) = \sqrt{x + 5}$



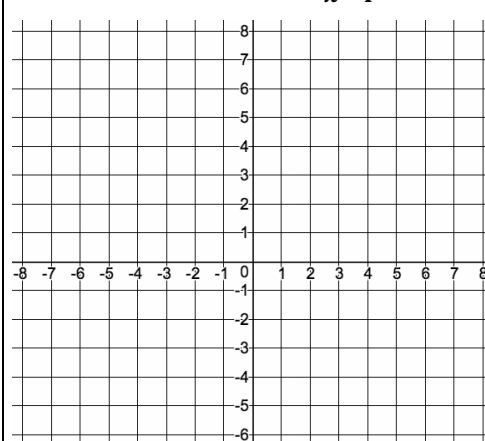
Graph. $m(x) = -\frac{2}{3}x + 3$



Graph. $n(x) = (x - 4)^2 - 2$



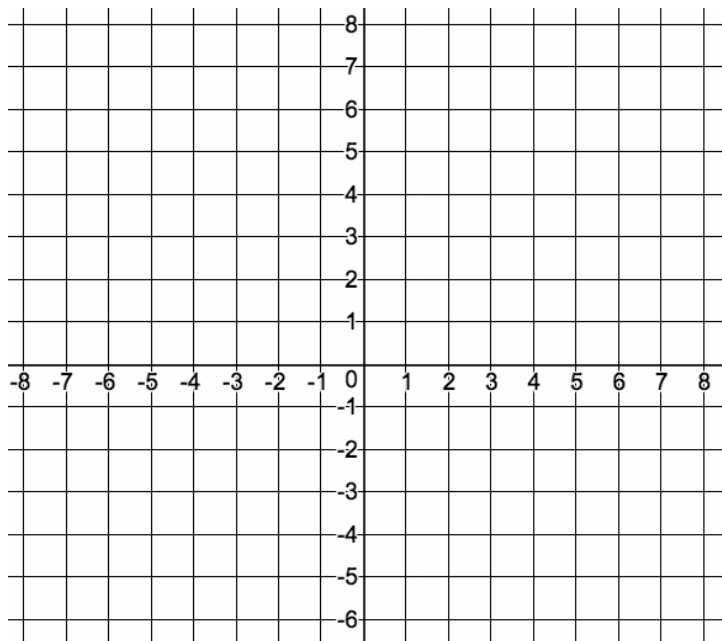
Graph. $l(x) = \frac{1}{x-4} + 2$



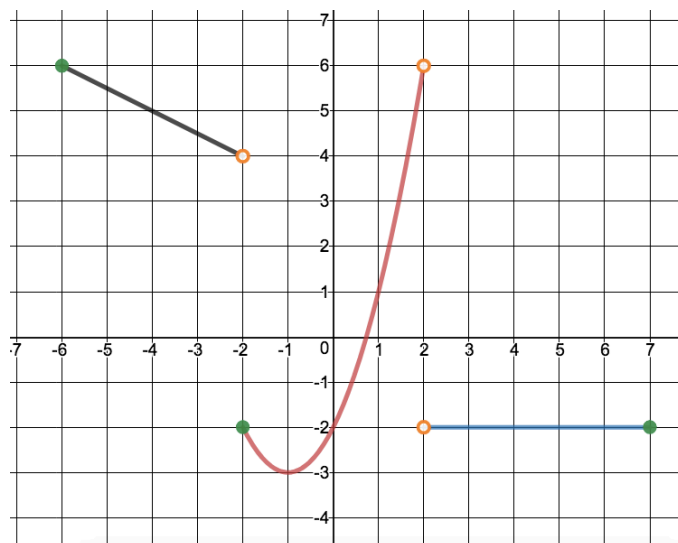
Guess the glue in by attempting the two problems below.

1) Graph the piecewise function below.

$$g(x) = \begin{cases} (x+2)^2 + 4 & \text{if } x < -2 \\ -3 & \text{if } -2 \leq x < 1 \\ -x + 2 & \text{if } x \geq 1 \end{cases}$$



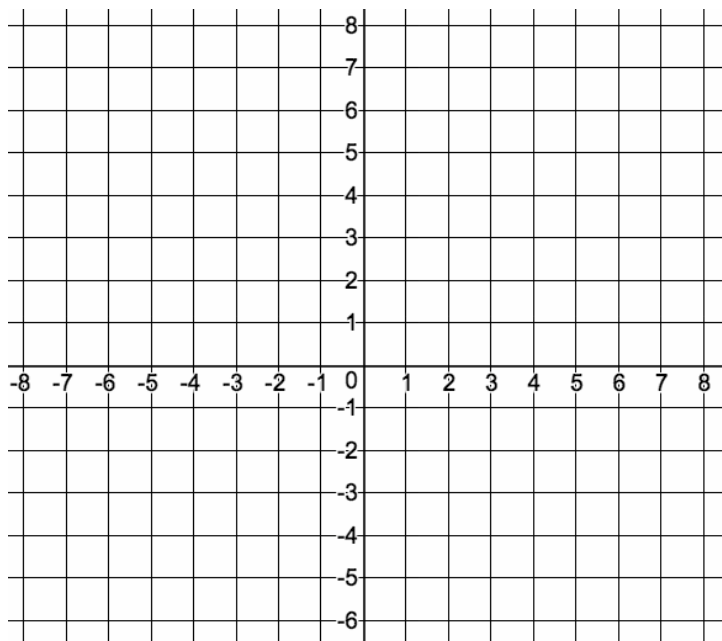
2) Write the equation of the piecewise function $h(x)$ graphed below.



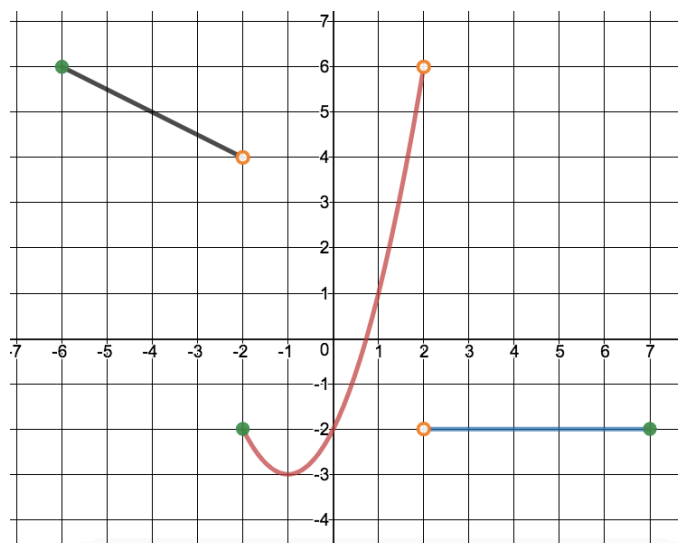
The real glue-in: (wait for me to show you the correct answer)

1) Graph the piecewise function below.

$$g(x) = \begin{cases} (x+2)^2 + 4 & \text{if } x < -2 \\ -3 & \text{if } -2 \leq x < 1 \\ -x + 2 & \text{if } x \geq 1 \end{cases}$$



2) Write the equation of the piecewise function $h(x)$ graphed below.



PC 1-2 Investigation and Notes (Part 2 – Investigating Patterns in Graphs)

Each graph below reveals real data gathered on 8/31/18. Answer the following questions for each graph (1 – 5)

- a) When were there periods of growth/increasing values?
- b) When were there periods of decline/decreasing values?
- c) When were the highest and lowest points on the graphs?
- d) What events occurred that you think may have influenced growth/decay?

1) CitiGroup stock

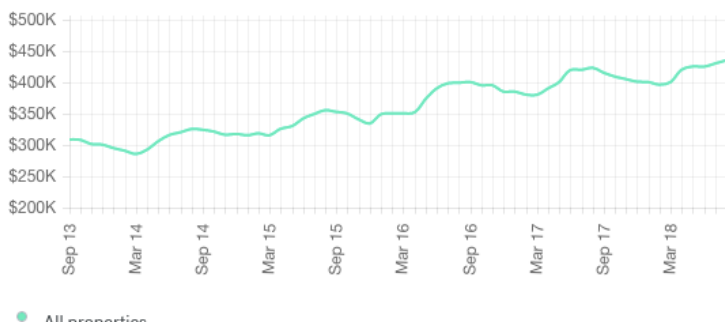


2) Google stock



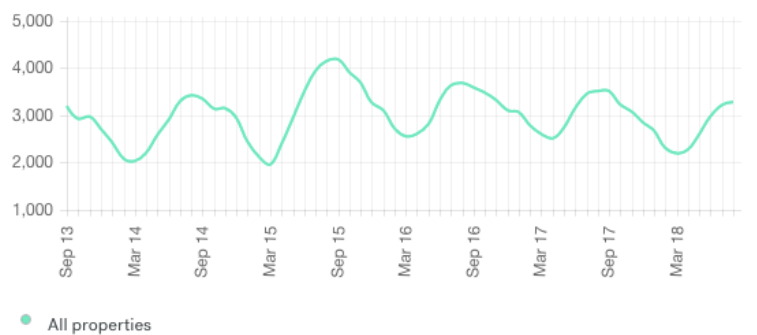
3) Portland homes.

Median Sales Price



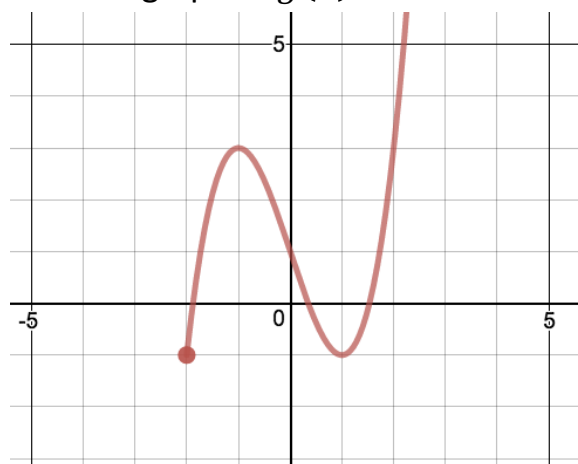
4) Facebook Posts.

Number of Sales



Guess the glue in by attempting the two problems below.

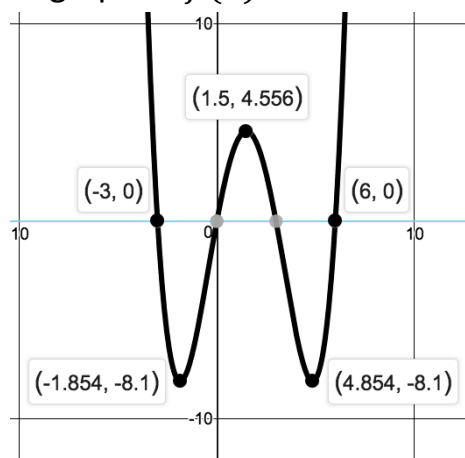
Below is the graph of $g(x)$



For what intervals is the graph of $g(x)$ increasing?

For what intervals is the graph of $g(x)$ decreasing?

Below is the graph of $f(x)$

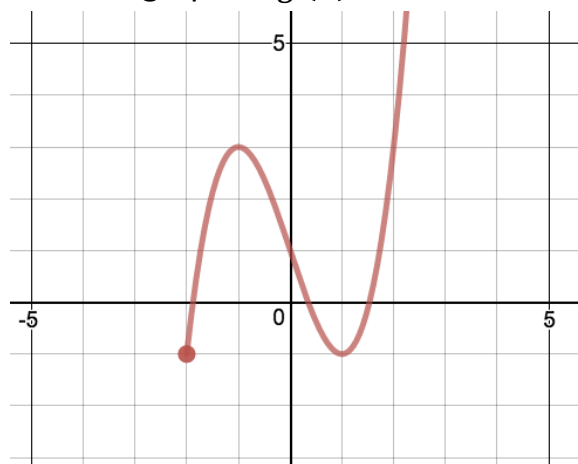


For what intervals is the graph of $g(x)$ increasing?

For what intervals is the graph of $g(x)$ decreasing?

The real glue-in: (wait for me to show you the correct answer)

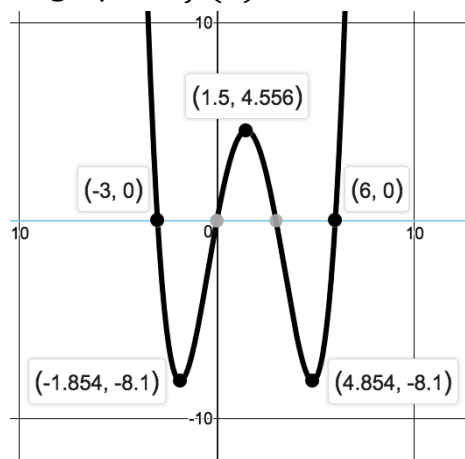
Below is the graph of $g(x)$



For what intervals is the graph of $g(x)$ increasing?

For what intervals is the graph of $g(x)$ decreasing?

Below is the graph of $f(x)$



For what intervals is the graph of $g(x)$ increasing?

For what intervals is the graph of $g(x)$ decreasing?