

1. Write an equation of a line for each given function. (Answer in reduced fraction form. No points for decimals.)

A.  $f(-4) = -10, f(-7) = 12$

B.  $f\left(\frac{1}{2}\right) = -6, f(4) = -3$

C.  $f(-5) = -1, f(6) = 3$

2. A tomato plant grows linearly by 2 inches every month starting from the height of 5 inches. After 3 months the neighboring rose bush starts obstructing the sunlight the tomato plant is getting. This results in the change of the rate of growth of the tomato plant - the growth drops from 2 to 1.5 inches every month. Write down the piecewise linear function that describes the height (H) of the tomato plant as a function of the number of months (m) passed.

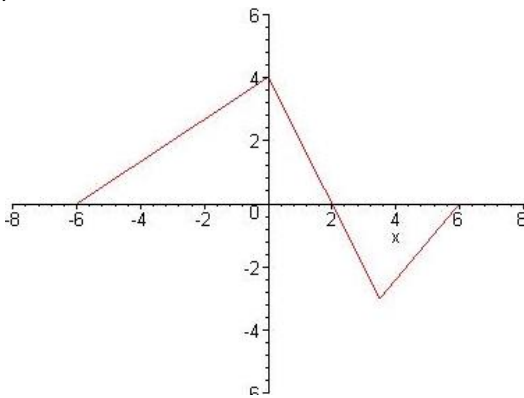
$H(m) =$

How tall is the tomato plant after 7 months? \_\_\_\_\_

3. Use the given graph of  $f(x)$  to sketch the graph of  $g(x)$  and  $h(x)$ .

a)  $g(x) = f(x + 3) - 4$

b)  $h(x) = -f(x)$

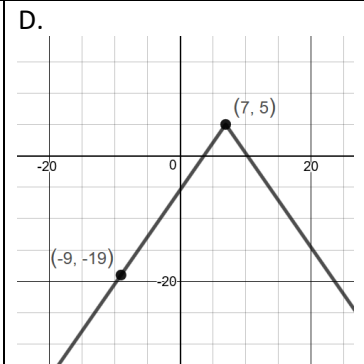
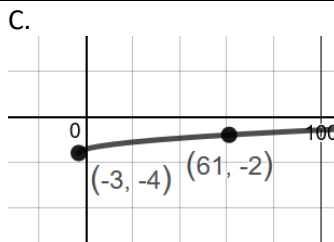
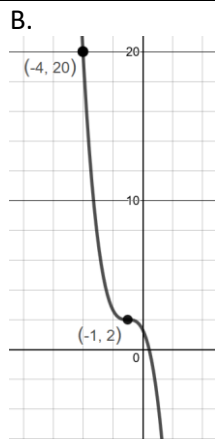
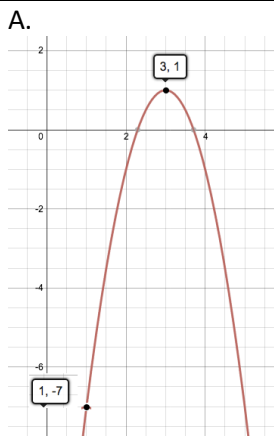


4. Sketch each piecewise function. Be sure to indicate with arrows if the lines are to continue. Each boundary should be clearly defined and the graph should meet each boundary.

A.  $f(x) = \begin{cases} 3 & x < -3 \\ 2|x-2| & -3 \leq x \leq 4 \\ \frac{1}{4}x^2 & x > 4 \end{cases}$

B.  $f(x) = \begin{cases} \frac{1}{3}x + 1 & x < -5 \\ -\frac{3}{2}x - 4 & -5 \leq x < 3 \\ \sqrt{x-3} + 3 & x \geq 3 \end{cases}$

5. Write an equation for the following functions.



6. Sketch Each Graph with at least 5 whole number points that adequately show the shape of the parent function. Please graph these on graph paper.

A.  $f(x) = -(x + 3)^2 - 5$

B.  $f(x) = \sqrt[3]{-x} + 4$

C.  $f(x) = 3 - |x - 5|$

D.  $f(x) = (-x + 6)^3 + 2$

E.  $f(x) = -3|x + 3| - 3$

F.  $f(x) = -\sqrt{\frac{1}{2}x} + 3$

G.  $f(x) = \frac{1}{4}(-x - 4)^2 + 2$

H.  $f(x) = 2\sqrt[3]{x - 3} + 1$