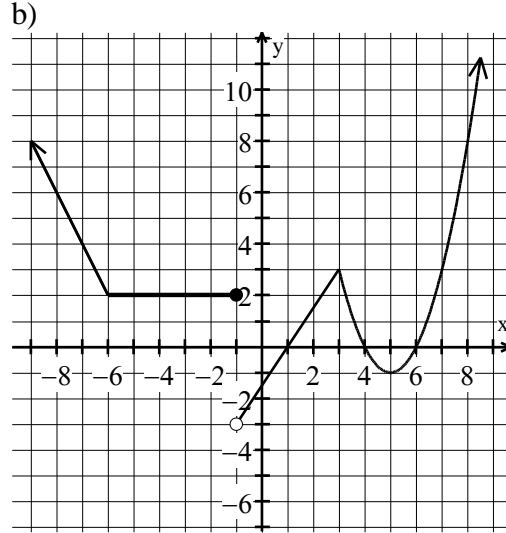
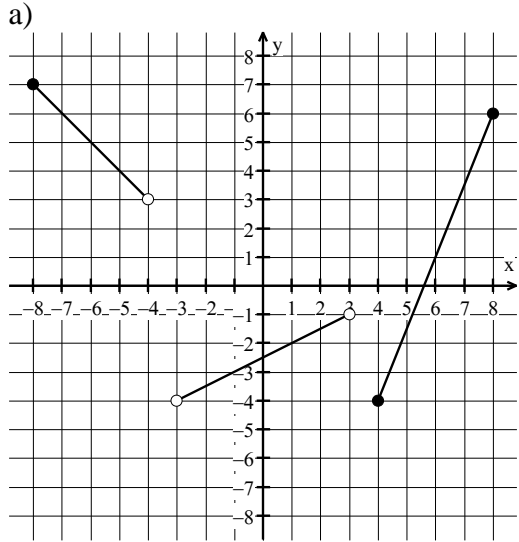


**Piecewise Functions Practice**

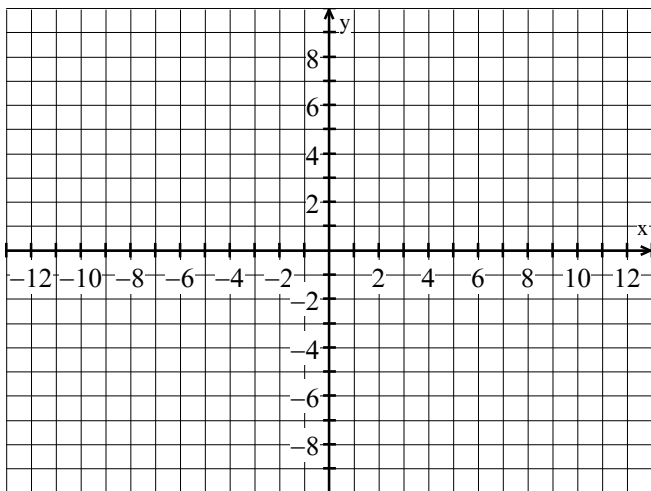
Completely show all work and reasoning. Use a pencil and highlight your answers.

1. Write the piecewise function for each graph. Note: the “pieces” are either linear or quadratic.



2. Graph each piecewise function.

$$f(x) = \begin{cases} 3(x+10) - 7, & -10 \leq x \leq -5 \\ -\frac{2}{3}(x+2) + 4, & -2 < x < 7 \\ -5, & 7 \leq x < 11 \end{cases}$$



3. Determine the following given  $f(x)$ .

$$f(x) = \begin{cases} -3x^2, & -7 \leq x \leq 4 \\ \frac{4}{9}x - 5, & 4 < x < 18 \\ -2x + 1, & 18 \leq x < 25 \\ 6, & 25 \leq x < \infty \end{cases}$$

a)  $f(-2) =$

b)  $f(18) =$

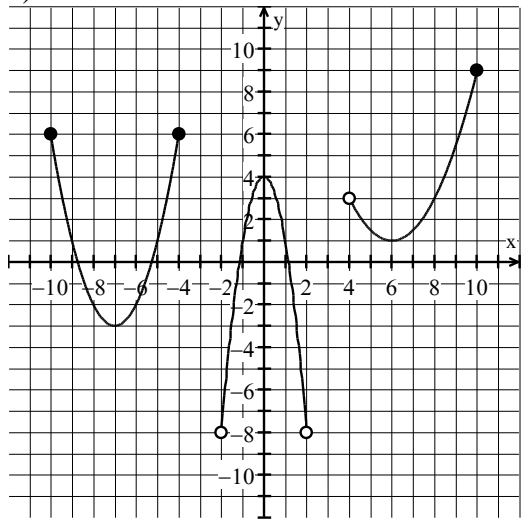
c)  $f(27) =$

d)  $f(-10) =$

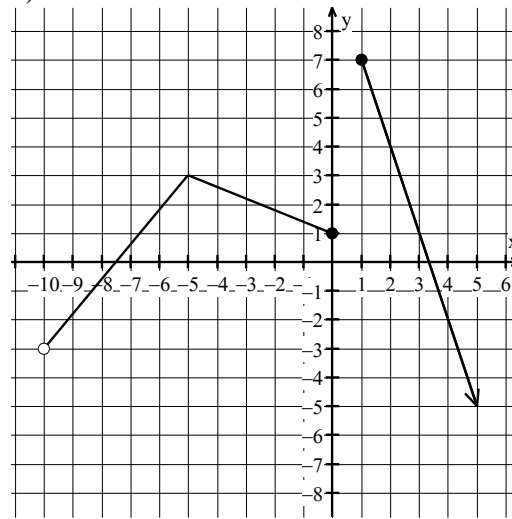
**Mixed Practice:**

1. Write the piecewise function for each graph. Note: the “pieces” are either linear or quadratic.

a)

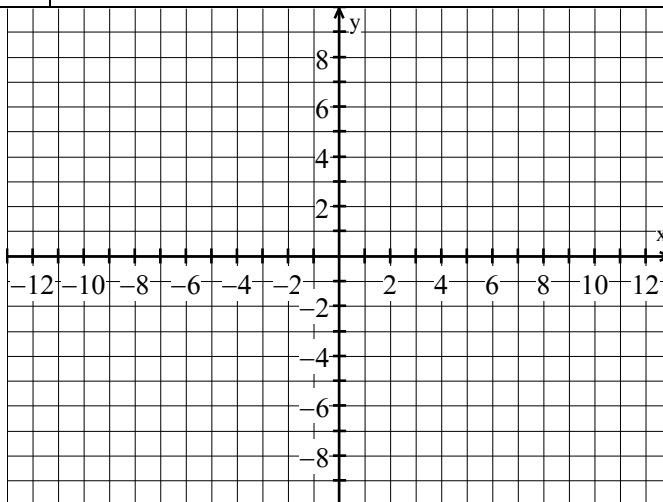


b)



2. Graph the piecewise function.

$$f(x) = \begin{cases} -4(x+12) + 8, & -12 \leq x \leq -9 \\ \frac{3}{4}(x+9) - 4, & -9 < x \leq 3 \\ \frac{1}{2}(x-3) + 5, & 3 < x < \infty \end{cases}$$



3. Completely simplify each expression. Assume variables are positive values.

a)  $\sqrt[5]{64a^{10}b^{23}}$

b)  $\left(\frac{2x^2y^{-7}}{5}\right)^3$

c)  $(243p^{12}q^{19})^{1/4}$

4. Tre'Shonti has been studying the spread of an infectious disease in an impoverished country, and she notes that the number of cases amongst the citizens has consistently increased by 1.75% each year. She records that there are currently 2,500,000 cases.

a) Assuming the rate does not change, write explicit and recursive functions  $C(t)$  for the number of cases after  $t$  years.

Explicit:

Recursive:

b) How many total people are projected to be infected in 8 months?

c) Approximately how many cases were there 6 and a half years ago?

5. Solve for all roots.

a)  $|7x - 1| = 18$

b)  $2|x - 4| - 5 = 17$

6. Answer the following given  $f(x) = 2x^2 - 16x + 26$ .

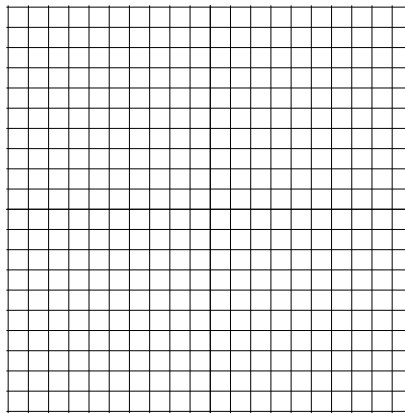
a) Rewrite in vertex form.

d) Graph the function.

e) Determine the x-intercept(s).

b) Determine the vertex.

c) Find the axis of symmetry.



7. Find all solutions, both real and non-real, to each quadratic equation using the given method.

a)  $x^2 + 10x + 41 = 0$  (Complete the Square)

b)  $6x^2 - 14x + 3 = 0$  (Quadratic Formula)