

More Piecewise Functions Practice

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

1. Given a function, write the corresponding absolute value function or piecewise function.

a) $f(x) = \begin{cases} -7(x+6)^2 - 1, & \infty < x \leq -6 \\ 7(x+6)^2 - 1, & -6 \leq x < \infty \end{cases}$

Absolute value function:

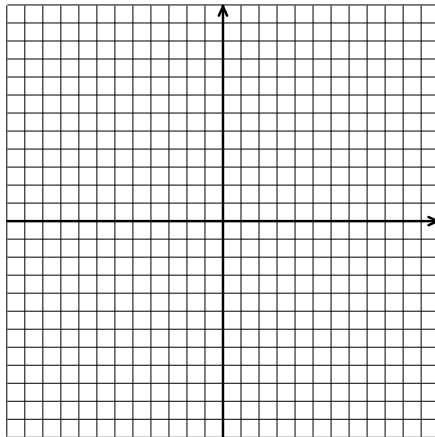
b) $f(x) = \frac{3}{8}|x-2| + 9$

Write a piecewise function:

2. Graph each function. Also, write a piecewise function for part (c).

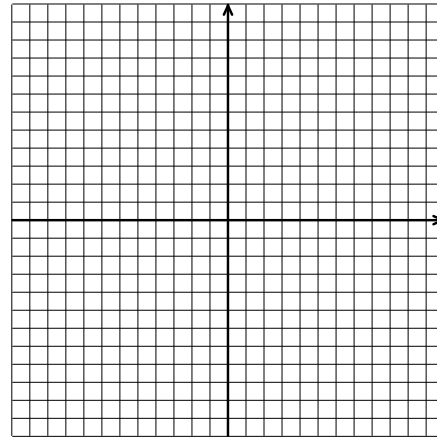
a)

$$f(x) = \begin{cases} -3(x+6)^2 + 7, & -8 \leq x \leq -4 \\ \frac{4}{3}(x+4) - 8, & -4 < x \leq 2 \\ 6, & 3 \leq x < 10 \end{cases}$$



b)

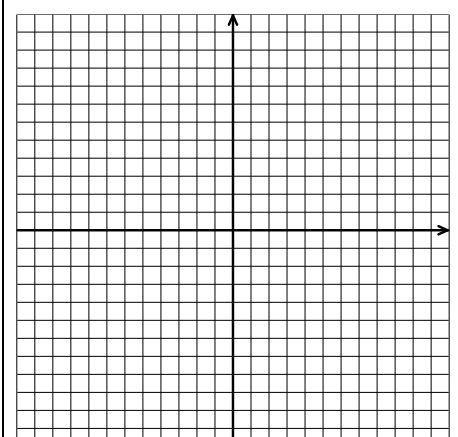
$$f(x) = \begin{cases} -\frac{2}{5}(x+6) + 4, & -11 < x < -1 \\ (x-2)^2 - 7, & -1 \leq x < 5 \\ \frac{5}{3}(x-8) + 7, & 5 \leq x < \infty \end{cases}$$



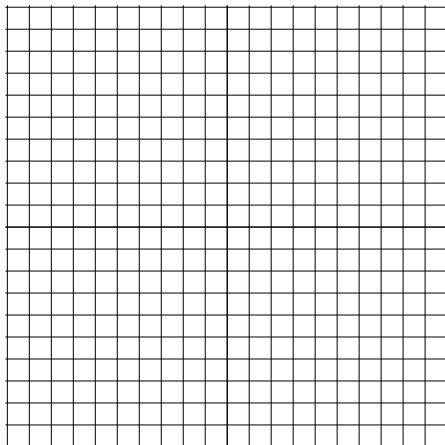
c)

$$f(x) = 2|x-3| - 5$$

Write a piecewise function:

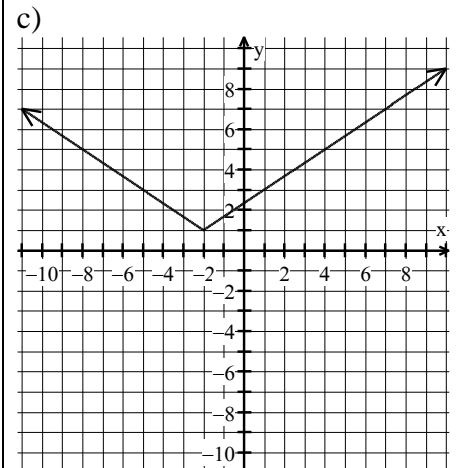
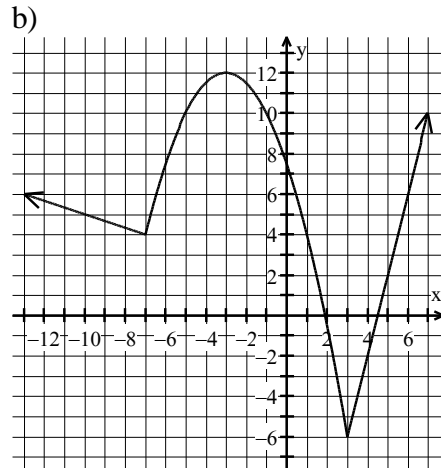
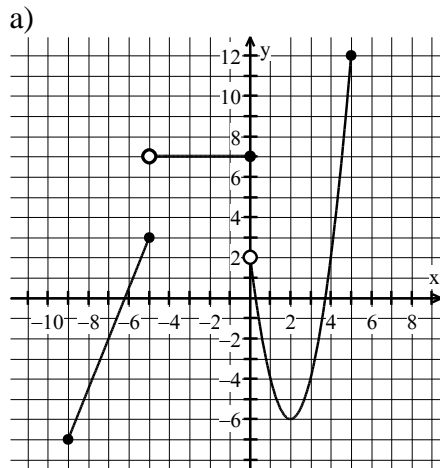


3. Quintonio took 1 hour to ride his skateboard to the harbor 6 miles away from ECHS. He stayed at the harbor for 3 hours, then he casually took 1 hour to ride 2 miles down strand. His mom called wondering where he was and said he had to come home. He rode 8 more miles for 2 hours to get home. Create a graph representing the total distance traveled versus time, then write a piecewise function.



Piecewise function:

4. Write the piecewise function for each graph. Note: the “pieces” are either linear or quadratic. Also, write the linear absolute value function for part (c).



Piecewise:

Absolute value:

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

$$f(x) = \begin{cases} -5(x+9) - 2, & -\infty < x \leq 0 \\ 2(x-3)^2, & 0 < x < 5 \\ -8, & 9 \leq x < 12 \\ \frac{7}{4}x + 16, & 12 \leq x \leq 33 \end{cases}$$

a) $f(20) =$

b) $f(0) =$

c) $f(12) =$

d) $f(7) =$

e) $f(2) =$

6. Simplify each expression. Write part (c) in $a + bi$ form.

a) $\sqrt[4]{81a^7b^{20}}$

b) $(32x^{13})^{1/3}$

c) $(8-i)(4+3i)$

7. Solve for the variable.

a) $|p-14| = 17$

b) $\frac{2}{3}|y+9| = 12$

c) $|3h-1| + 5 = 3$