

Graph and evaluate. Check solutions on Graphing Calculators

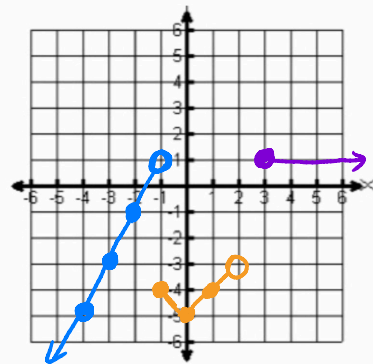
$$1. f(x) = \begin{cases} 2x+3, & x < -1 \\ |x|-5, & -1 \leq x < 2 \\ 1, & x \geq 2 \end{cases}$$

evaluate:

$$f(1) = \underline{-4}$$

$$f(6) = \underline{1}$$

$$f(0) = \underline{-5}$$



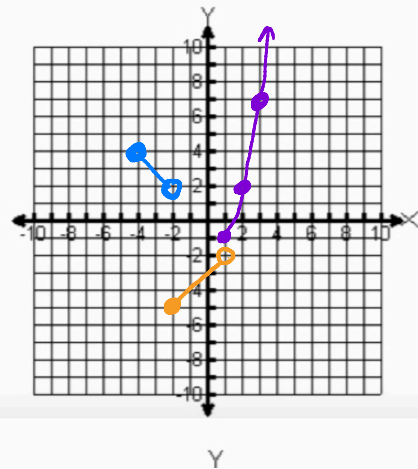
$$2. f(x) = \begin{cases} -x, & -4 \leq x < -2 \\ x-3, & -2 \leq x < 1 \\ x^2-2, & x \geq 1 \end{cases}$$

evaluate:

$$f(-4) = \underline{4}$$

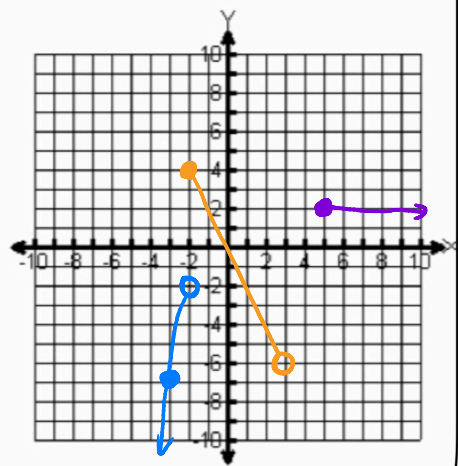
$$f(-2) = \underline{-5}$$

$$f(1) = \underline{-1}$$

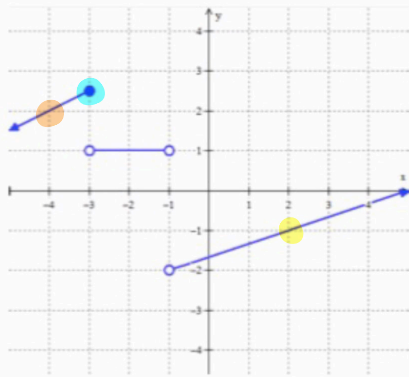


$$3. \quad f(x) = \begin{cases} 2, & x \geq 5 \\ -2x, & -2 \leq x < 3 \\ 2 - x^2, & x < -2 \end{cases}$$

evaluate: $f(-2) = \underline{4}$
 $f(5) = \underline{5}$



Evaluate using the graphs provided

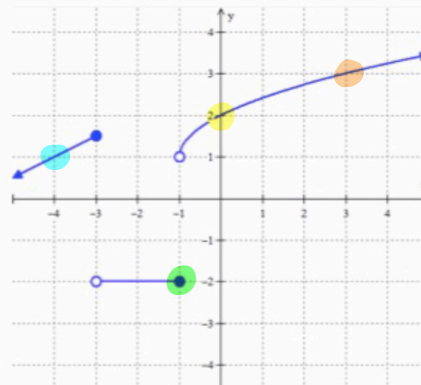


$$f(2) = -1$$

$$f(-3) \approx 2.5$$

$$f(-1) = \text{Undefined}$$

$$f(-4) = 2$$



$$f(0) = 2$$

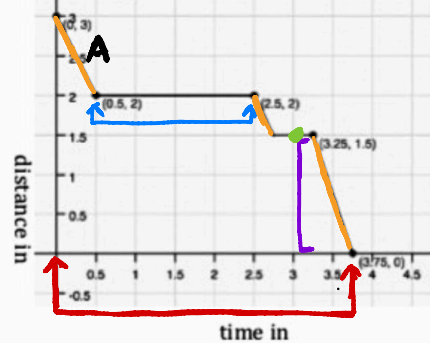
$$f(-4) = 1$$

$$f(-1) = -2$$

$$f(3) = 3$$

5. Isaac lives 3 miles away from his school. School ended at 3 pm and Isaac began his walk home with his friend Tate who lives 1 mile away from the school, in the direction of Isaac's house. Isaac stayed at Tate's house for a while and then started home. On the way he stopped at the library. Then he hurried home. The graph at the right is a **piece-wise defined function** that shows Isaac's distance from home during the time it took him to arrive home.

- How much time passed between school ending and Isaac's arrival home? **3.75 hours**
- How long did Isaac stay at Tate's house? **2 hours**
- How far is the library from Isaac's house? **1.5 miles**
- Where was Isaac, 3 hours after school ended? **Library**
- Use function notation to write a mathematical expression that says the same thing as question d. **$f(3) = 1.5$**
- When was Isaac walking the fastest? How fast was he walking?



Comparing all the slope

$$\textcircled{A} \frac{3-2}{0-0.5} = \frac{1}{-0.5} = -2 \text{ mph}$$

$$\textcircled{B} \frac{1.5-2}{3.25-2.5} = \frac{-0.5}{0.75} = -0.6\bar{7} \text{ mph}$$

$$\textcircled{C} \frac{0-1.5}{3.75-3.25} = \frac{-1.5}{.5} = -3 \text{ mph}$$