U2 D4 Review KEY

Wednesday, January 20, 2021 2:49 PM

U2D4 piecewise...

U2D4: Piecewise Review

PRACTICE

Use the piecewise function to evaluate the following.

1.

$$f(x)=\begin{cases}-2x^2-1, & x\le 2\\ \frac{4}{5}x-4, & x>2\end{cases}$$

a. $f(0)=$ $-2(0)^2-1$ $=-1$

b. $f(5)=$ $\frac{4}{5}(5)-4$ $=4-4=0$

c. $f(2)=$ $-2(2)^2-1$ $=-8-1=-9$

d. $f(-3)=$ $-2(-3)^2-1$ $-18-1=-19$

2.

$$f(x)=\begin{cases}x^3-7x, & x\le -3\\ 8, & -3<x\le 3\\ \sqrt{2x+3}, & x>3\end{cases}$$

a. $f(-5)=$ $(-5)^3-7(-5)$ $-125+35=-90$

b. $f(11)=$ $\sqrt{2(11)+3}$ $=\sqrt{22+3}=\sqrt{25}$ $=5$

c. $f(0)=$ 8

d. $f(3)=$ 8

3.

$$f(x)=\begin{cases}\frac{3}{x+4}, & x<-5\\ x^2-3x, & -5<x\le 0\\ x^4-7, & x>0\end{cases}$$

a. $f(-1)=$ $(-1)^2-3(-1)$ $1+3=4$

b. $f(4)=$ $(4)^4-7$ $256-7=249$

c. $f(-10)=$ $\frac{3}{-10+4}=\frac{3}{-6}=-\frac{1}{2}$

d. $f(0)=$ $(0)^2-3(0)$ $=0$

4.

$$f(x)=\begin{cases}|2x+7|, & x\le -4\\ 1+x^2, & -4<x\le 1\\ 6, & 1<x<3\\ \frac{1}{3}x+8, & x\ge 3\end{cases}$$

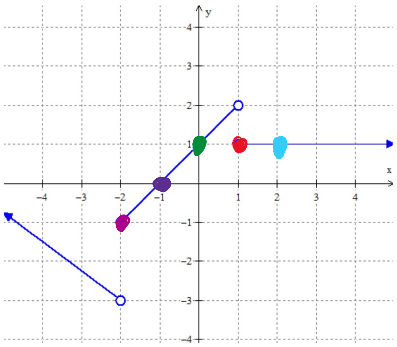
a. $f(5)=$ $\frac{1}{3}(5)+8$ $\frac{5}{3}+8(\frac{3}{3})$ $=\frac{29}{3}$

b. $f(1)=$ $1+(1)^2=2$

c. $f(-4)=$ $|2(-4)+7|$ $=|-8+7|=1$

d. $f(2)=$ 6

5.



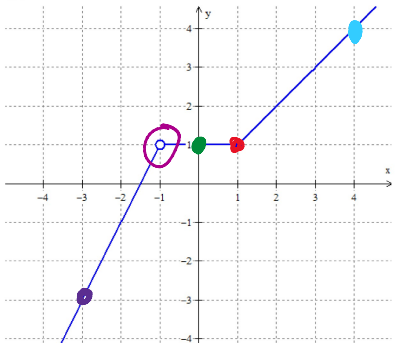
a. $f(-1)=$ 0

b. $f(2)=$ 1

c. $f(1)=$ 1

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

6.

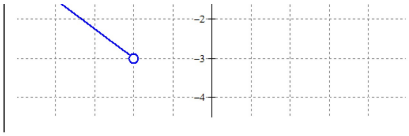


a. $f(-3)=$ -3

b. $f(4)=$ 4

c. $f(1)=$ 1

d. $f(-1)=$ does not exist



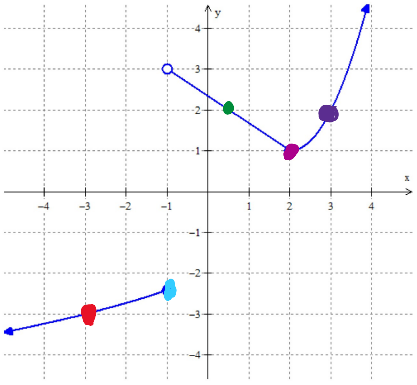
d. $f(-2) = -1$

e. $f(0) = 1$

d. $f(-1) =$ does not exist

e. $f(0) = 1$

7.



a. $f(3) = 2$

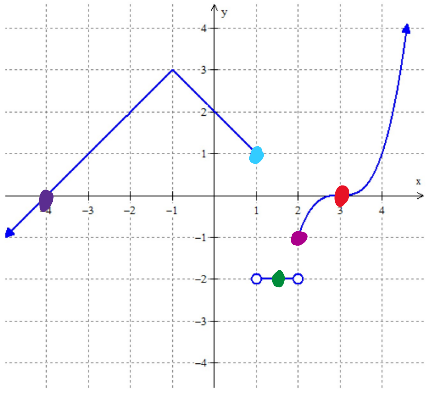
b. $f(-1) = -2.5$

c. $f(-3) = -3$

d. $f(2) = 1$

e. $f(0.5) = 2$

8.



a. $f(-4) = 0$

b. $f(1) = 1$

c. $f(3) = 0$

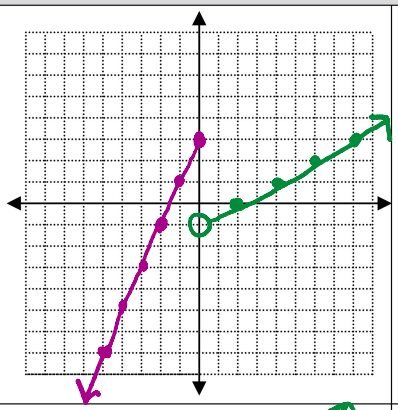
d. $f(2) = -1$

e. $f(1.5) = -2$

Graph the following piecewise functions.

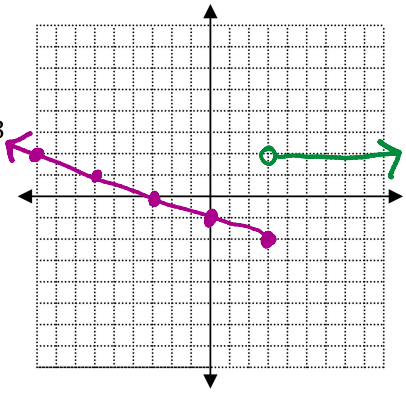
9.

$$f(x) = \begin{cases} 2x + 3, & x \le 0 \\ \frac{1}{2}x - 1, & x > 0 \end{cases}$$



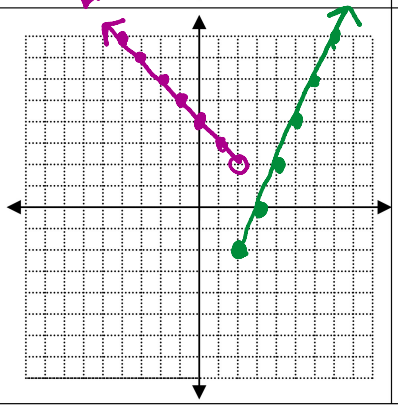
10.

$$f(x) = \begin{cases} -\frac{1}{3}x - 1, & x \le 3 \\ 2, & x > 3 \end{cases}$$



11.

$$f(x) = \begin{cases} 4 - x, & x < 2 \\ 2x - 6, & x \ge 2 \end{cases}$$



12.

$$f(x) = \begin{cases} \frac{2}{3}x + 3, & x \le 0 \\ 3, & 0 < x < 2 \\ -\frac{1}{2}x, & x \ge 2 \end{cases}$$