Honors PreCalculus '20-21 Name:_____
Piece-Wise Defined Functions Test
Page 1
Calculator allowed

1. $$f(x)=\begin{cases}\sqrt{-x^2-8x-12}, & \text{if } -6\le x\le -2\\ x^2-4, & \text{if } -2<x<2\\ \dfrac{2-x}{x}, & \text{if } 2\le x\end{cases}$$

i) Is $f(x)$ continuous at $x=-2$? Why or why not?

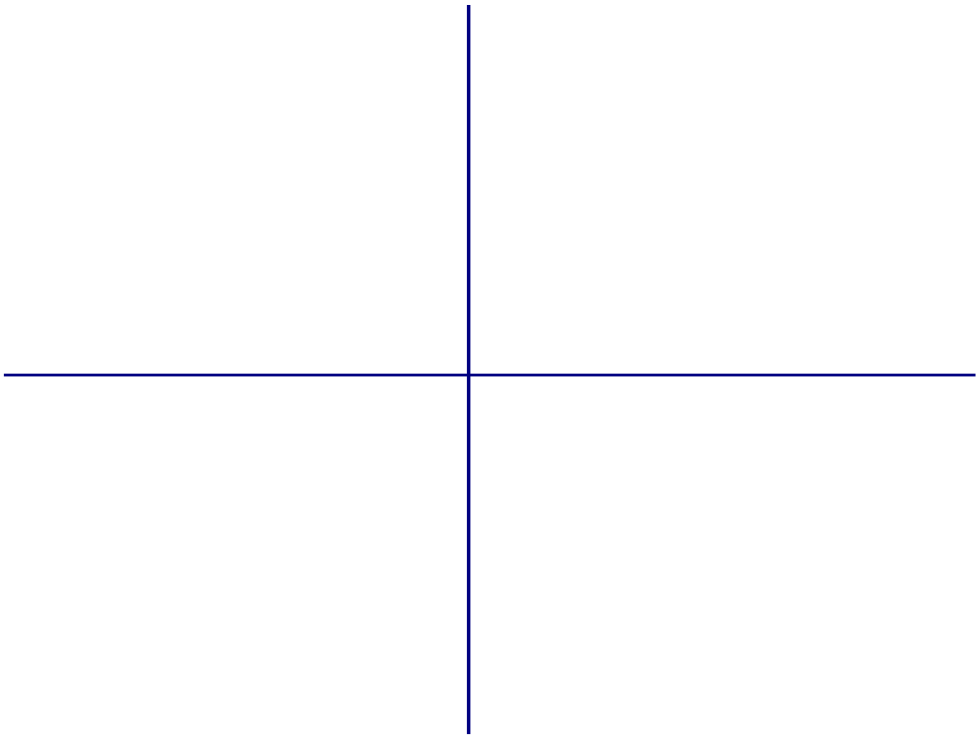
ii) Is $f(x)$ differentiable at $x=-2$? Why or why not?

2. $$f(x)=\begin{cases}\sqrt{-x^2-8x-12}, & \text{if } -6\le x\le -2\\ x^2-4, & \text{if } -2<x<2\\ \dfrac{2-x}{x}, & \text{if } 2\le x\end{cases}$$

i) Is $f(x)$ continuous at $x=2$? Why or why not?

ii) Is $f(x)$ differentiable at $x=2$? Why or why not?

3. Sketch $f(x)=\begin{cases}\sqrt{-x^2-8x-12}, & \text{if } -6\le x\le -2\\ x^2-4, & \text{if } -2<x<2\\ \dfrac{2-x}{x}, & \text{if } 2\le x\end{cases}$. State the Traits listed.



Domain:

Range:

Zeros:

Y-int:

VAs:

EB (Left):

EB (Right):

x-values of discontinuities:

x-values of non-differentiability:

Extreme Points (provide non-graphical evidence):