Name: _____

Continuity

Exercise 1: Determine the value of *c* so that $f(x)$ is continuous

$$f(x)=\begin{cases}5x-3 & \text{if } x\le 2\\ cx+4 & \text{if } x>2\end{cases}$$

Exercise 2: Determine the discontinuities of the following functions and state why the function fails to be continuous at those points:

1) $f(x)=\dfrac{x^2-3x-10}{x+2}$

2) $f(x)=\begin{cases}x+3 & \text{if } x\ge 2\\ x^2+1 & \text{if } x\prec 2\end{cases}$

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

4) $f(x)=\begin{cases}4-x & \text{if } x\prec 3\\ x-2 & \text{if } 0\prec x\prec 3\\ x-1 & \text{if } x\le 0\end{cases}$

5) $f(x)=\dfrac{x^4-1}{x^2-1}$

6) $f(x)=\dfrac{x^3+x^2-17x+15}{x^2+2x-15}$

7) $f(x)=x^3-7x$

8) $f(x)=\dfrac{x^2-4}{x^2-5x+6}$

9) $f(x)=\dfrac{x^2+3x+2}{x^2+4x+3}$

10) $f(x)=\dfrac{x-2}{x^2-4}$

11) $f(x)=\dfrac{x-1}{\sqrt{x^2+3}-2}$

12) $f(x)=\dfrac{x}{|x|-3}$