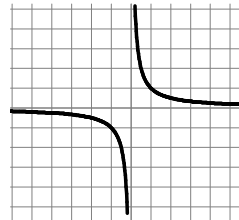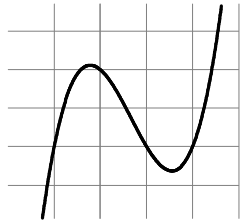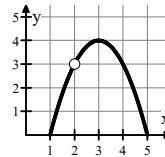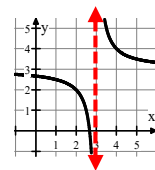Write your questions and thoughts here!

Continuity

Types of Discontinuities:

1.

2.

3.

For each function identify the type of each discontinuity and where it is located.

1. $f(x) = \dfrac{x^2 - 8x + 12}{x^2 + 3x - 10}$

2. $g(x) = \dfrac{x+1}{x^4 - 1}$

3. $h(x) = \tan 2x$ for $0 \le x \le 2\pi$

4. $f(x) = x^2 - 1$

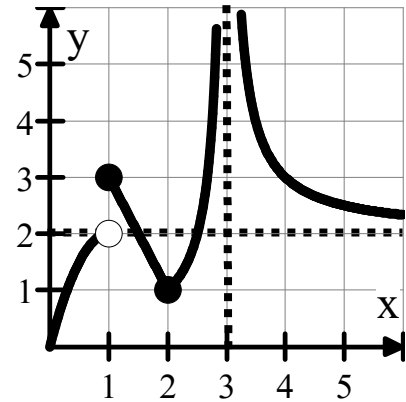| For each function identify the type of each discontinuity and where it is located.		
1. $f(x) = \frac{x}{x+1}$	2. $f(x) = \frac{x^2}{x^2+3x}$	3. $f(x) = x^3 - 4x$
4. $f(x) = \frac{x^2+2x-3}{x+3}$	5. $f(x) = \frac{x+2}{x^2-2x-8}$	6. $f(x) = \sec 2x$ for $0 \le x \le 2\pi$
7. $f(x) = \frac{x-5}{x^2-7x+10}$	8. $f(x) = \frac{2x}{2x-5}$	9. $f(x) = \frac{4x+5}{3}$
10. $f(x) = \frac{x-1}{x^2+3x-4}$	11. $f(x) = \frac{x^2-16}{x-4}$	12. $f(x) = \csc\left(\frac{x}{2}\right)$ for $0 \le x \le 2\pi$

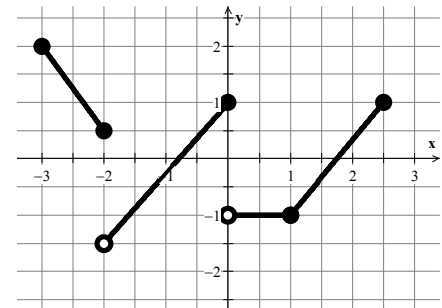13. The graph of the function $f(x)$ is shown to the right:

    Which of the following statements is true about f?
    I. f is undefined at $x = 1$.

    II. f is defined but not continuous at $x = 2$.

    III. f is defined and continuous at $x = 3$.

    (A) Only I   (B) Only II   (C) I and II   (D) I and III   (E) None of the statements are true.

Questions 14 through 16 are based on the function $f(x)$ shown in the graph on the right.

14. The function $f(x)$ has a removable discontinuity at:

    (A) $x = -2$ only   (B) $x = 0$ only   (C) $x = 1$ only

    (D) $x = -2$ and $x = 0$ only   (E) $f(x)$ has no removable discontinuities.

---

15. On what intervals is $f(x)$ continuous?

    (A) $[-3, -2] \cup [-2, 0] \cup [0, 2.5]$ (B) $[-3, -2] \cup (-2, 0] \cup [0, 2.5]$

    (C) $[-3, -2] \cup (-2, 0] \cup (0, 2.5]$ (D) $[-3, -2] \cup [-2, 0] \cup (0, 2.5]$

    (E) $[-3, -2] \cup (-2, 0] \cup (0, 1) \cup (1, 2.5]$

---

16. The function has a jump discontinuity at:

    (A) $x = -2$ only   (B) $x = 0$ only   (C) $x = 1$ only

    (D) $x = -2$ and $x = 0$ only   (E) $f(x)$ has no jump discontinuities.