Name: _____ **AP**

Classwork 12

Announcement: Unit Quiz on Limits will be next Wednesday
Reminder: Problem set is due next Tuesday

1. **"The Pizza Problem"**

Find $\lim_{x \to 4} \dfrac{\sqrt{x^2 + 9} - 5}{\sqrt{x^2 - 7} - 3}$

2. Find $\lim_{x \to 3} \dfrac{3x^2 - 21x + 36}{x^2 - 9}$

3. Find $\lim_{x \to 0} \dfrac{4x^6 - 5x^3 + x^2}{2x^7 + 3x^5 - 4x^2}$

4. Find $\lim_{x \to \infty} \dfrac{4x^3 - 7}{2x^3}$

5. Find $\lim_{x \to 5} \dfrac{x - 5}{\sqrt{x^2 + 15x} - 10}$

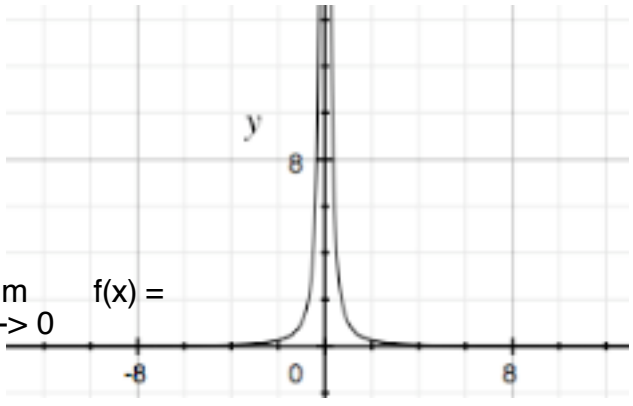
6. Find $\lim_{x \to 2} \frac{\sin^2 x - 5x}{x - 2}$

7. Find $\lim_{x \to 0} \frac{\sqrt{\sin x + 1} - (1 + x)}{x}$

8. $f(x) = \begin{cases} x^2 - 5 & \text{for } x \neq 4 \\ -2 & \text{for } x = 4 \end{cases}$ Find $\lim_{x \to 4} f(x)$

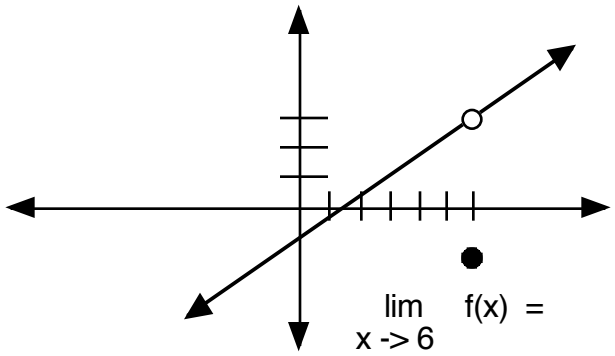
9. Which functions do you think would be called **"continuous"?** Which would be **discontinuous**?

a)



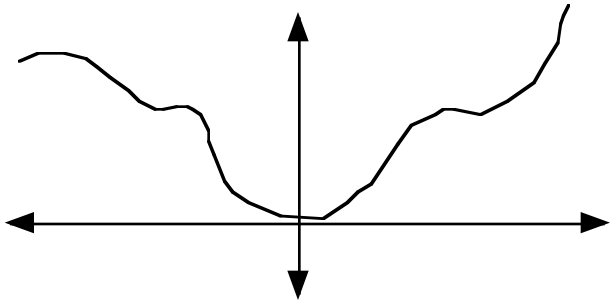
$\lim_{x \to 0} f(x) =$

b)

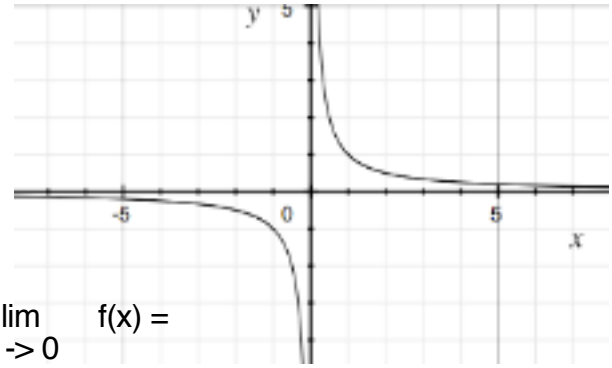


$\lim_{x \to 6} f(x) =$

c)



d)



$\lim_{x \to 0} f(x) =$

Practice Problems

1. Find $\lim_{x \to 1} 3x^2$

2. Find $\lim_{x \to 3} \frac{x - 3}{x^2 - 9}$

3. Find $\lim_{x \to \infty} \frac{x^5 + 3x - x^2 + 1}{x^3}$

4. Find $\lim_{x \to 2} \frac{\sqrt{x^2 + 6x} - 4}{x - 2}$