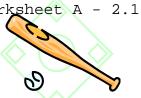
2ND TRY... 2 POINTS 3RD TRY... High five!

3 Strikes Yer Out!



1.
$$\lim_{x \to -2} \frac{x^2 + 1}{3x^2 - 2x + 5} = \frac{(-2)^2 + 1}{3(-2)^2 - 2(-2) + 5}$$

2.
$$\lim_{x\to 0} \frac{\sin 2x}{3x} = \lim_{x\to 0} \frac{3 \sin 2x}{3 \cdot 3x}$$

= $\frac{2}{3} \lim_{x\to 0} \frac{\sin 2x}{2x} = \frac{2}{3} \frac{\sin 2x}{3}$

3.
$$\lim_{x\to 0} (e^x \sin x) = e^{\circ} \cdot \sin 0$$
$$= 1 \cdot 0 = \boxed{0}$$

4.
$$\lim_{x \to 1} \frac{x^2 - 1}{2x^2 - x - 1} = \lim_{x \to 1} \frac{(x - 1)(x + 1)}{(\ell x + 1)(x - 1)}$$
$$= \lim_{x \to 1} \frac{x + 1}{2x + 1} = \boxed{\frac{2}{3}}$$

5.
$$\lim_{x \to 0} \frac{\tan x}{x} = \lim_{x \to 0} \frac{\sin x}{\cos x}$$

$$= \lim_{x \to 0} \frac{\sin x}{x} \cdot \lim_{x \to 0} \frac{\sin x}{x} = \lim_{x \to 0} \frac{\sin x}{x} \cdot \lim_{x \to 0} \frac{\sin x}{x}$$

$$= |\cdot| = ||\cdot||$$

6.
$$\lim_{x\to 4} \sqrt{1-2x} = \sqrt{1-2(4)} = \sqrt{-7}$$

3 Strikes Yer Out!



1.
$$\lim_{x \to -\infty} \frac{2x^2 + 3}{5x^2 + 7} = \lim_{x \to -\infty} \frac{2x^2}{5x^3}$$

$$2. \lim_{x \to \infty} \frac{x}{e^x} = \boxed{0}$$

3.
$$\lim_{x \to \infty} \frac{x^3 - 4x^2 + 3x + 3}{x - 3}$$

$$= \lim_{x \to \infty} \frac{x^3}{x} = \lim_{x \to \infty} x^2 = \infty$$

4.
$$\lim_{x \to -\infty} \frac{5 - x^4}{x^3 + 2} = \lim_{x \to -\infty} \frac{-x^4}{x^3}$$

$$= \lim_{x \to -\infty} -x = \boxed{\infty}$$

5. Find the vertical asymptote(s) and use limits to describe the behavior to the left and right of the asymptote(s).

$$f(x) = \frac{x+3}{2-x}$$

$$V.A.: x = 2$$

$$\lim_{x \to 2^{+}} f(x) = -\infty$$

$$\lim_{x \to 2^{-}} f(x) = \infty$$

$$\lim_{x \to 2^{-}} f(x) = \infty$$

6. Find a right and left end behavior model for the function.

$$f(x) = -3x + e^x$$



Group Members:

1. What are the 3 different types of discontinuity?

Infinite, removable, jump

2. Find all discontinuities of the function and give what type each is:

$$f(x) = \frac{5x^2 - 13x - 6}{3x^2 - 5x - 12} = \frac{(5x + 2)(x - 3)}{(3x + 4)(x - 3)}$$
Infinite disc.: $x = -\frac{4}{3}$
Remov. disc.: $x = 3$

3. Is the function continuous or not? Explain why or why not.

$$f(x) = \begin{cases} x^2 + 5, x \ge 1 & \lim_{x \to 1^+} f(x) = 6 \\ 12x - 5, x < 1 & \lim_{x \to 1^-} f(x) = 7 \end{cases}$$

$$\text{Not continuous, since in } f(x) = 0$$

4. Find the value(s) of "c" such that f(x) is continuous at x=2.

$$f(x) = \begin{cases} c^{2}x + 5, x \ge 2 \\ x + 8, x < 2 \end{cases}$$

$$c^{2} \cdot 2 + 5 = 2 + 8$$

$$2c^{2} + 5 = 10$$

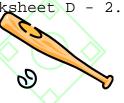
$$2c^{2} = 5$$

$$c^{2} = \frac{5}{2}$$



3 Strikes Yer Out!

orksheet D - 2.4



1. Find the average rate of change of
$$f(x) = x^3 + 2$$
 over [2, 5].

ay. rate of change =
$$\frac{f(s)-f(e)}{s-2} = \frac{127-10}{3} = \frac{117}{3}$$

2. Find the slope of the curve
$$f(x) = \frac{1}{1-x}$$
 at $x = 4$.

$$\lim_{h \to 0} \frac{f(4+h)-f(4)}{h} = \lim_{h \to 0} \frac{\frac{1-x}{3-h} + \frac{1}{13}}{h} = \lim_{h \to 0} \frac{\frac{3+-3-h}{3(-3-h)}}{h}$$

$$= \lim_{h \to 0} \frac{\frac{-h}{3(3-h)}}{h} = \lim_{h \to 0} \frac{\frac{-1}{3(-3-h)}}{\frac{3(-3-h)}{3(-3-h)}} = \frac{-1}{-9} = \boxed{9}$$

3. Find the equation of the normal line of
$$f(x) = x^2 + 3x + 5$$
 at $x = -2$.

$$\lim_{h \to 0} \frac{f(-2+h) - f(-2)}{h} = \lim_{h \to 0} \frac{(-2+h)^2 + 3(-2+h) + 5 - 3}{h}$$

$$= \lim_{h \to 0} \frac{4(-4h + h^2 - 16 + 3h + 18 - 3)}{h} = \lim_{h \to 0} \frac{h^2 - h}{h}$$

$$= \lim_{h \to 0} \frac{h(h-1)}{h} = -1$$

$$\lim_{h \to 0} \frac{h(h-1)}{h} = -1$$

Names:	
•	

Worksheet	1st Attempt – 3 points	2 nd Attempt – 2 points	3 rd Attempt – HIGH FIVE!
Α			
В			
С			
D			
Total Points			

3 Strikes Yer Out Rules

- 1) Each worksheet has 3-6 problems. After you are done, bring up the one you finished for grading.
- 2) You must work together so that each group member is at the same pace.

Note: Hitchhiking is illegal in Calculus!!

- 3) When your whole group is finished with the worksheet, one person should bring *ALL* worksheets to check with me. Bring your *score sheet* with you!!
- 4) Scoring:
 - If your group gets *ALL* problems correct the first time, you will receive 3 points (to be written on the score sheet).
 - Otherwise, you will have to take your sheet, go back, and correct them...on the second time, you will receive 2 points.
 -on the third time...it's a HIGH FIVE FOR YOU!!

Good Luck!!