**Math 1A (9:30am – 10:20am)**
**Group Quiz 1**
**Wed Jan 14, 2008**

Group Members' Names: _____

**SCORE: ___ / 10 POINTS**

**NO CALCULATORS ALLOWED**

Evaluate the following limits algebraically. Show all algebraic work.

**SCORE: ___ / 8 POINTS**

[a] $\lim_{x\to 2} \dfrac{x^3-4x}{x^2+x-6}$

$= \lim_{x\to 2} \dfrac{x(x^2-4)}{(x+3)(x-2)}$

$= \lim_{x\to 2} \dfrac{x(x+2)(x-2)}{(x+3)(x-2)}$

$= \lim_{x\to 2} \dfrac{x(x+2)}{x+3}$ *

$= \dfrac{2(2+2)}{2+3} = \dfrac{8}{5}$

[b] $\lim_{x\to 1} \dfrac{4-4x}{\sqrt{3x+1}-2}$

$= \lim_{x\to 1} \dfrac{4-4x}{\sqrt{3x+1}-2} \cdot \dfrac{\sqrt{3x+1}+2}{\sqrt{3x+1}+2}$

$= \lim_{x\to 1} \dfrac{(4-4x)(\sqrt{3x+1}+2)}{(3x+1)-4}$

$= \lim_{x\to 1} \dfrac{(4-4x)(\sqrt{3x+1}+2)}{3x-3}$ *

$= \lim_{x\to 1} \dfrac{-4(x-1)(\sqrt{3x+1}+2)}{3(x-1)}$

$= \lim_{x\to 1} \dfrac{-4}{3}(\sqrt{3x+1}+2)$ *

$= -\dfrac{4}{3}(\sqrt{3+1}+2) = \dfrac{-16}{3}$

[c] $\lim_{x\to -3} \dfrac{\frac{1}{x^2}-\frac{1}{9}}{x+3}$

$= \lim_{x\to -3} \dfrac{\frac{1}{x^2}-\frac{1}{9}}{x+3} \cdot \dfrac{9x^2}{9x^2}$

$= \lim_{x\to -3} \dfrac{9-x^2}{9x^2(x+3)}$ *

$= \lim_{x\to -3} \dfrac{(3-x)(3+x)}{9x^2(x+3)}$

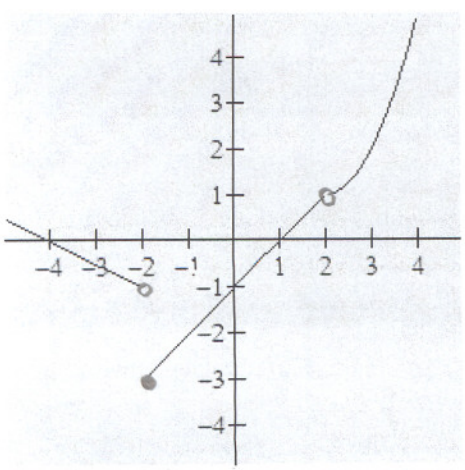
$= \lim_{x\to -3} \dfrac{3-x}{9x^2} = \dfrac{3-(-3)}{9(-3)^2} = \dfrac{6}{81} = \dfrac{2}{27}$ *

1 POINT EACH

* SUBTRACT ½ POINT FOR EACH QUESTION WHERE YOU DIDN'T WRITE "$\lim_{x\to\_}$" APPROPRIATELY (MAXIMUM −1½ POINTS)

Evaluate the following for the function graphed below. If a value does not exist, write DNE.

**SCORE: ___ / 2 POINTS**




[a] $\lim_{x\to -2^-} f(x) =$ −1

[b] $\lim_{x\to 2} f(x) =$ 1

[c] $f(2) =$ DNE

[d] $\lim_{x\to -1} f(x) =$ −2

½ POINT EACH