VER 1

MATH 113 – QUIZ 2 – 11 SEPTEMBER 2012

Answer all of the following questions in the space provided. Show all work as partial credit may be given. Answers without justification, even if they are correct, will earn no credit.

1. (5 pts.) Find $\lim_{t\to 0} \frac{t^2-2t}{t^3+t}$.

$$\frac{t^2-2t}{t^3+t} = \frac{t(t-2)}{t(t^2+1)} = \frac{t-2}{t^2+1} \quad \text{if } t \neq 0.$$

$$\therefore \lim_{t\to 0} \frac{t^2-2t}{t^3+t} = \lim_{t\to 0} \frac{t-2}{t^2+1} = \frac{-2}{1} = -2 \;//$$

2. (5 pts.) Find all vertical asymptotes of the function $f(x) = \frac{x^2-1}{x^3+x}$.

$x^3+x=0$

$x(x^2+1)=0$

$x=0$

$(0)^2-1=-1 \neq 0$

$\therefore$ $x=0$ is the only vertical asymptote

VER 2

MATH 113 – QUIZ 2 – 11 SEPTEMBER 2012

Answer all of the following questions in the space provided. Show all work as partial credit may be given. Answers without justification, even if they are correct, will earn no credit.

1. (5 pts.) Find $\lim_{t\to -1} \frac{t^2-1}{t^3+t}$.

$$\lim_{t\to -1} \frac{t^2-1}{t^3+t} = \frac{0}{-2} = 0 \;//$$

2. (5 pts.) Find all vertical asymptotes of the function $f(x) = \frac{x^2-2x-3}{x^2-x-6}$.

$x^2-x-6=0$

$(x+2)(x-3)=0$

$x=-2 \quad x=3$

$(-2)^2-2(-2)-3 = 5 \neq 0$

$\therefore$ $x=-2$ is a vertical asymp

$(3)^2-2(3)-3 = 0$

$\frac{x^2-2x-3}{x^2-x-6} = \frac{(x+1)(x-3)}{(x+2)(x-3)}$

$= \frac{x+1}{x+2}$ if $x \neq 3$

$\therefore$ $x=3$ is <u>not</u> a vertical asymptote

VER 3

MATH 113 – QUIZ 2 – 11 SEPTEMBER 2012

Answer all of the following questions in the space provided. Show all work as partial credit may be given. Answers without justification, even if they are correct, will earn no credit.

1. (5 pts.) Find $\lim_{x\to 3} \frac{x^2-2x-3}{x^2-x-6}$.

$$\frac{x^2-2x-3}{x^2-x-6} = \frac{(x+1)(x-3)}{(x+2)(x-3)} = \frac{x+1}{x+2} \text{ if } x \neq 3$$

$$\lim_{x\to 3} \frac{x^2-2x-3}{x^2-x-6} = \lim_{x\to 3} \frac{x+1}{x+2} = \frac{4}{5} //$$

2. (5 pts.) Find all vertical asymptotes of the function $f(t) = \frac{t+1}{t^2+t}$.

$t^2+t=0$ If $t=-1$, $t+1=0$ also

$t(t+1)=0$ And $\lim_{t\to -1} \frac{t+1}{t^2+t} = \lim_{t\to -1} \frac{1}{t} = -1$

$t=0 \quad t=-1$

So $t=0$ is only vertical asymptote