Calculus 201-007-50 C2
Quiz 10
November 12, 2008

Name: SOLUTIONS
Student ID: _____

1. *(4 marks).* Simplify:

$$\frac{x-\frac{y^2}{x}}{1+\frac{y}{x}}$$

$$= \frac{x\cdot\frac{x}{x}-\frac{y^2}{x}}{1\cdot\frac{x}{x}+\frac{y}{x}} = \frac{\frac{x^2}{x}-\frac{y^2}{x}}{\frac{x}{x}+\frac{y}{x}} = \frac{\frac{x^2-y^2}{x}}{\frac{x+y}{x}} =$$

$$= \frac{x^2-y^2}{x} \div \frac{x+y}{x} = \frac{x^2-y^2}{x}\cdot\frac{x}{x+y} = \frac{(x+y)(x-y)}{x}\cdot\frac{x}{x+y}$$

$$= x-y$$

2. *(6 marks).* Solve for x:

a)

$$\frac{5}{2x}+\frac{1}{2}=\frac{7x-1}{5x}$$

LCD: $10x$

$10x\cdot\frac{5}{2x}+10x\cdot\frac{1}{2}=10x\cdot\frac{7x-1}{5x}$

$5\cdot 5+5x=2(7x-1)$

$25+5x=14x-2$

$25+2=14x-5x$

$27=9x$

$\frac{27}{9}=x$

$3=x$

VALID

$\therefore \boxed{x=3}$

b)

$$1-\frac{12}{x^2-4}=\frac{3}{x+2}$$

$1-\frac{12}{(x+2)(x-2)}=\frac{3}{x+2}$ LCD: $(x+2)(x-2)$

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

$(x^2-4)-12=3(x-2)$

$x^2-16=3x-6$

$x^2-3x-10=0$

$(x-5)(x+2)=0$

$x=5$ VALID $\quad x=-2$ EXTRANEOUS

$\therefore \boxed{x=5}$