Quiz 4 **July 22, 2004**

Name KEY

Show your work on all problems, and leave your solutions in the simplest form possible.
Perform the indicated operations. Simplify when possible.

$$\frac{a-5b}{a+b} - \frac{a+7b}{a+b}$$

$$= \frac{a-5b-(a+7b)}{a+b}$$

$$= \frac{-12b}{a+b}$$

$$\frac{4xy}{x^2-y^2} + \frac{x-y}{x+y}$$

	Rem
$x^2-y^2 = (x-y)(x+y)$	1
$x+y = x+y$	$(x-y)$
LCM $= (x-y)(x+y)$	

$$= \frac{4xy(1) + (x-y)(x-y)}{(x-y)(x+y)}$$

$$= \frac{4xy + x^2 - 2xy + y^2}{(x-y)(x+y)}$$

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

$$= \boxed{\frac{x+y}{x-y}}$$

$$N\left\{\frac{\frac{x}{x-2}+\frac{x}{x-1}}{\frac{3}{x^2-1}+\frac{x}{x-1}}\right. \quad D$$

	Rem
$x-2 = x-2$	$x-1$
$x-1 = x-1$	$x-2$
LCM $= (x-1)(x-2)$	

	Rem
$x^2-1 = (x-1)(x+1)$	1
$x-1 = x-1$	$x+1$
LCM $= (x-1)(x+1)$	

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

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

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

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

$$N \div D = \frac{x(2x-3)}{(x-1)(x-2)} \cdot \frac{(x-1)(x+1)}{x^2+x+3}$$

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