Adv. Algebra 2 – Concept Quiz

Form B

Name: *key

Date: _____ Period: _____

21. Graphs of Rational Functions

a) Find the characteristics listed below of the function $f(x) = \frac{x^2-11x+28}{x-6}$.

$\frac{(x-7)(x-4)}{(x-6)}$

a. Vertical Asymptote $x=6$

b. End Behavior $y=x-5$

c. x-intercept(s) $(7,0)$ $(4,0)$

d. y-intercept $(0, \frac{14}{3})$

$\frac{28}{-6} = \frac{-14}{3}$

$6 \mid 1 \quad -11 \quad 28$

$\quad\quad 6 \quad -30$

$1 \quad -5 \quad -2$

$x-5+\frac{-2}{x-6}$

b) As x gets larger and larger in the positive and negative direction, the graph of $g(x) = \frac{4x-9}{x-3}$ approaches the line $y = 4$. Explain why this is end behavior of $g(x)$.

22. Solving Rational Equations

a) Find all values of x that make the equation true.

$5 + \frac{4}{x^2+2x} = \frac{x}{x+2}$

$x(x+2)$

$\frac{(x^2+2x)}{(x^2+2x)} \cdot 5 + \frac{4}{x^2+2x} = \frac{x}{x+2}$

$\frac{5x^2+10x}{x^2+2x} + \frac{4}{x^2+2x} = \frac{x}{x+2}$

$x(x+2) \cdot \frac{5x^2+10x+4}{(x+2)\cdot x} = \frac{x}{x+2} \cdot (x+2) \cdot x$

$5x^2+10x+4 = x^2$

$4x^2+10x+4=0$

$2x^2+5x+2=0$

$2x^2+4x+1x+2=0$

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

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

$x=-2, -1/2$

$x=-1/2$

b) How can extraneous solutions arise in the process of solving an equation?

23. Multiply and Divide Rational Expressions

$\frac{2x^2-13x+15}{14x^3-21x^2} \div \frac{x^2-25}{14x^2+70x}$

$\frac{2}{x}$

24. Adding and Subtracting Rational Expressions

$\frac{7}{x^2+3x-10} - \frac{5}{x+5}$

$\frac{7}{(x+5)(x-2)} + \frac{-5}{(x+5)} \cdot \frac{(x-2)}{(x-2)}$

$\frac{7}{(x+5)(x-2)} + \frac{-5x+10}{(x+5)(x-2)} = \frac{-5x+17}{(x+5)(x-2)}$

Adv. Algebra 2 – Concept Quiz

Name: * Key

Form A

Date: _____ Period: _____

21. Graphs of Rational Functions

a) Find the characteristics listed below of the function $f(x) = \frac{x^2-12x+32}{x-7}$. $\frac{(x-8)(x-4)}{x-7}$

a. Vertical Asymptote $x=7$

b. End Behavior $y=x-5$

c. x-intercept(s) $(8,0)$ $(4,0)$

d. y-intercept $(0, -\frac{32}{7})$

$7 \mid 1 \quad -12 \quad 32$
$\quad\quad\quad 7 \quad -35$
$\quad 1 \quad -5 \quad [-3]$

$x-5+\frac{-3}{x-7}$

b) As x gets larger and larger in the positive and negative direction, the graph of $g(x) = \frac{5x-19}{x-4}$ approaches the line $y = 5$. Explain why this is end behavior of $g(x)$.

22. Solving Rational Equations

a) Find all values of x that make the equation true.

$\frac{5x}{x-5} - 2 = \frac{8}{x^2-5x}$

$\frac{5x}{x-5} + \frac{-2x+10}{-2\cdot(x-5)} = \frac{8}{x(x-5)}$

$x(x-5)\cdot\frac{3x+10}{x-5} = \frac{8}{x(x-5)}\cdot x(x-5)$

$3x^2+10x = 8$

$3x^2+10x-8=0$

$3x^2+12x-2x-8=0$

$3x(x+4)-2(x+4)=0$

$(x+4)(3x-2)=0$

$x=-4, \frac{2}{3}$

b) How can extraneous solutions arise in the process of solving an equation?

23. Multiply and Divide Rational Expressions

$\frac{2x^2-13x+15}{14x^3-21x^2} \div \frac{x^2-25}{14x^2+70x} = \frac{(2x-3)(x-5)}{7\cdot x\cdot x(2x-3)} \cdot \frac{7\cdot 2\cdot x(x+5)}{(x+5)(x-5)}$

$\frac{2x-3}{2x-3}\cdot\frac{7}{7}\cdot\frac{x}{x}\cdot\frac{(x-5)}{(x-5)}\cdot\frac{(x+5)}{(x+5)}\cdot\frac{2}{x}$

$\frac{2}{x}$

24. Adding and Subtracting Rational Expressions

$\frac{5x}{x+3} - \frac{3}{x^2+11x+24}$ $\frac{5x}{x+3}\cdot\frac{(x+8)}{(x+8)} - \frac{3}{(x+8)(x+3)}$

$\frac{5x^2+40x}{(x+3)(x+8)} - \frac{3}{(x+8)(x+3)}$

$\frac{5x+43}{(x+3)(x+8)}$ $\frac{5x^2+40x-3}{(x+8)(x+3)}$