

Name Adam Allred

FC Supplemental Instruction

SI Session 9

Topic: Composition of Functions and Domains Revisited

Purpose or Goal: Students will learn how to create composite functions and find the domains of those functions
Week 9
Materials and supplies: Students should bring a pen or pencil, paper and notes
Opening Strategy (SI Leader) : <ul style="list-style-type: none">● Study Tips and Discipline Warm up with the quiz assigned in class - find $R(Q(x))$ and its domain
Collaborative Learning Activity : (30-50 min) Composition of Functions Puzzle Pass out puzzles. Make groups or have the students work on their own. See attached worksheet for the original functions.
Next Week's Topic: After Spring break!! Logs and Exponential FUNctions
Closing: (SI Leader): <ul style="list-style-type: none">● trivia that is helpful for the next quiz – what is Phi?● Which activity do they like more- board work, worksheets, or group games

$T(P(x))$	$f(f(x))$	$g(Q(x))$	$Z(x)$
$\frac{2\sqrt{x-2}}{x}$	x	$\frac{5x+9}{14-5x}$	$\frac{x}{1}$
$P(T(x))$	$R(z(x))$	$R(z(x))$	$\frac{2x-2}{2x+6}$
$\frac{7x^2-3x-13}{14x^2+6x-19}$	$\frac{\sqrt{x-1}-1}{2\sqrt{x-1}+5}$	$\frac{10x^2+13x+46}{x^2-6x+9}$	$\frac{10x^2+13x+46}{x^2-6x+9}$
$R(T(x))$	$T(g(x))$	$Q(R(x))$	$Z(T(x))$
$\frac{7x^2-3x-12}{2}$	$\frac{x+2}{5}$	$\frac{9\sqrt{1-x}\sqrt{3+x}+7}{2x+5}$	$\frac{9x^2+5\sqrt{2x+5}}{x-1}$
$P(P(x))$	$f(g(x))$	$T(z(x))$	$Z(T(x))$
$\frac{X^2+2x+1}{X^2+3x-14}$	$\frac{x+2}{5}$	$\frac{7x^2+3x-12}{2}$	$\frac{-1}{x^2}$
$T(Q(x))$	$P(h(x))$	$h(T(x))$	$f(T(x))$
$\frac{\sqrt{7x^2+3x-14}}{7x^2+3x-12}$	$\frac{4}{x^2+4}$	$\frac{7x^2+3x-12}{2}$	$\frac{X^2+2x+1}{7x^2+3x-12}$
$Z(Q(x))$	$P(g(x))$	$T(z(x))$	$T(Q(x))$
$\frac{12x-23}{9-x}$	$\frac{x^2-6x+9}{2x^2-2x+13}$	$\frac{9\sqrt{1-x}\sqrt{3+x}+7}{2x+5}$	$\frac{12x-23}{9-x}$
$Z(R(x))$	$R(h(x))$	$Q(R(x))$	$Z(T(x))$
$\frac{9-x-6}{12x-23}$	$\frac{x-2}{2x+10}$	$\frac{9x^2+5\sqrt{2x+5}}{x-1}$	$\frac{9x^2+5\sqrt{2x+5}}{x-1}$
$f(h(x))$	$P(h(x))$	$h(T(x))$	$f(T(x))$
$\frac{x}{x-2}$	$\frac{4}{x^2+4}$	$\frac{7x^2+3x-12}{2}$	$\frac{X^2+2x+1}{7x^2+3x-12}$
$Z(h(x))$	$R(h(x))$	$Q(R(x))$	$Z(T(x))$
$\frac{\sqrt{x-2}}{2}$	$\frac{2x^2-2x+1}{2x^2-2x+1}$	$\frac{9x^2+5\sqrt{2x+5}}{x-1}$	$\frac{9x^2+5\sqrt{2x+5}}{x-1}$
$g(T(x))$	$R(h(x))$	$Q(R(x))$	$Z(T(x))$
$\frac{7x^2+3x-10}{7x^2+3x-15}$	$\frac{x-2}{2x+10}$	$\frac{9x^2+5\sqrt{2x+5}}{x-1}$	$\frac{9x^2+5\sqrt{2x+5}}{x-1}$
$h(k(x))$	$T(h(x))$	$T(z(x))$	$Z(T(x))$
$\frac{X}{X-1}$	$\frac{7x^2+6x-48}{4}$	$\frac{9x^2+5\sqrt{2x+5}}{x-1}$	$\frac{9x^2+5\sqrt{2x+5}}{x-1}$
$Q(Q(x))$	$P(h(x))$	$h(T(x))$	$f(T(x))$
$\frac{X}{X-1}$	$\frac{4}{x^2+4}$	$\frac{7x^2+3x-12}{2}$	$\frac{X^2+2x+1}{7x^2+3x-12}$
$g(Q(x))$	$R(z(x))$	$Q(R(x))$	$Z(T(x))$
$\frac{X}{X-1}$	$\frac{\sqrt{x-1}-1}{2\sqrt{x-1}+5}$	$\frac{10x^2+13x+46}{x^2-6x+9}$	$\frac{9x^2+5\sqrt{2x+5}}{x-1}$
$T(P(x))$	$P(f(x))$	$Q(R(x))$	$Z(T(x))$
$\frac{2\sqrt{x-2}}{x}$	$\frac{2x^2-2x+1}{x^2-2x+1}$	$\frac{9x^2+5\sqrt{2x+5}}{x-1}$	$\frac{9x^2+5\sqrt{2x+5}}{x-1}$
$Q(Q(x))$	$P(f(x))$	$Q(R(x))$	$Z(T(x))$
$\frac{X}{X-1}$	$\frac{2x^2-2x+1}{x^2-2x+1}$	$\frac{9x^2+5\sqrt{2x+5}}{x-1}$	$\frac{9x^2+5\sqrt{2x+5}}{x-1}$
$g(Q(x))$	$R(h(x))$	$Q(R(x))$	$Z(T(x))$
$\frac{X}{X-1}$	$\frac{x-2}{2x+10}$	$\frac{10x^2+13x+46}{x^2-6x+9}$	$\frac{9x^2+5\sqrt{2x+5}}{x-1}$
$T(P(x))$	$P(f(x))$	$Q(R(x))$	$Z(T(x))$
$\frac{2\sqrt{x-2}}{x}$	$\frac{2x^2-2x+1}{x^2-2x+1}$	$\frac{9x^2+5\sqrt{2x+5}}{x-1}$	$\frac{9x^2+5\sqrt{2x+5}}{x-1}$
$Q(Q(x))$	$P(f(x))$	$Q(R(x))$	$Z(T(x))$
$\frac{X}{X-1}$	$\frac{2x^2-2x+1}{x^2-2x+1}$	$\frac{9x^2+5\sqrt{2x+5}}{x-1}$	$\frac{9x^2+5\sqrt{2x+5}}{x-1}$
$g(Q(x))$	$R(h(x))$	$Q(R(x))$	$Z(T(x))$
$\frac{X}{X-1}$	$\frac{x-2}{2x+10}$	$\frac{10x^2+13x+46}{x^2-6x+9}$	$\frac{9x^2+5\sqrt{2x+5}}{x-1}$
$T(P(x))$	$P(f(x))$	$Q(R(x))$	$Z(T(x))$
$\frac{2\sqrt{x-2}}{x}$	$\frac{2x^2-2x+1}{x^2-2x+1}$	$\frac{9x^2+5\sqrt{2x+5}}{x-1}$	$\frac{9x^2+5\sqrt{2x+5}}{x-1}$

Composition of FUNCTIONS worksheet

$$f(x) = x/x - 1$$

$$g(x) = x + 2/x - 3$$

$$h(x) = x/2$$

$$P(x) = 1/x^2 + 1$$

$$Z(x) = (x - 1)^{(1/2)}$$

$$R(x) = x^{-1/2}x + 5$$

$$T(x) = 7x^2 + 3x - 12$$

$$Q(x) = (x - 2)^{(1/2)}/x$$