

8. $f(x) = 5 - \frac{2}{x}$ $g(x) = \frac{2}{x}$

$f+g = (5 - \frac{2}{x}) + (\frac{2}{x})$
 $= 5$

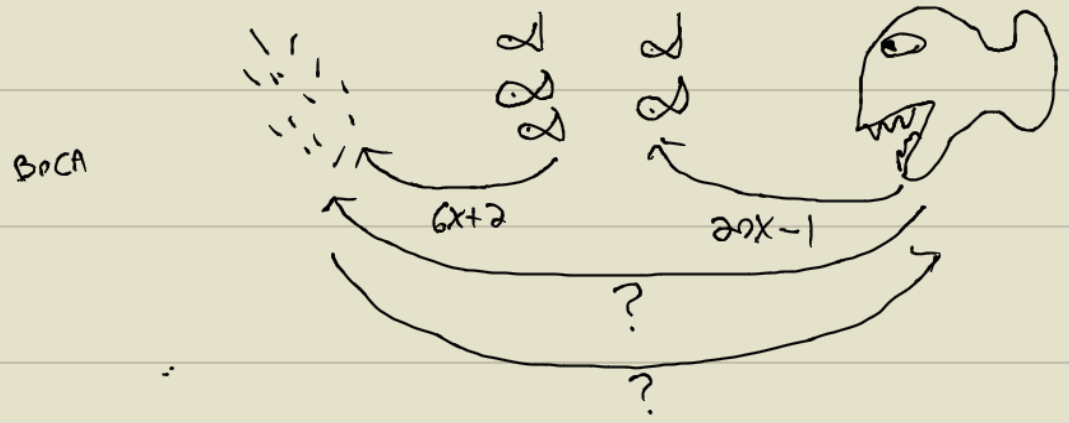
$f-g = (5 - \frac{2}{x}) - (\frac{2}{x})$
 $= 5 - \frac{2}{x} - \frac{2}{x}$
 $= 5 - \frac{4}{x}$

$= \frac{5}{1} - \frac{4}{x}$
 $= \frac{5x}{x} - \frac{4}{x}$
 $= \frac{5x-4}{x}$

$3\frac{1}{2} = \frac{7}{2}$
 $3 + \frac{1}{2}$

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

COMPOSITION OF FUNCTIONS



9. $f(x) = 9x-2$ $g(x) = 5x-1$

a) $f \circ g = f(g)$
 $= 9(g) - 2$
 BUT $g = 5x-1$ so
 $= 9(5x-1) - 2$
 $= 45x - 9 - 2$
 $= 45x - 11$

b) $g \circ f = g(f)$
 $= 5(f) - 1$
 BUT $f = 9x-2$ so
 $= 5(9x-2) - 1$
 $= 45x - 10 - 1$
 $= 45x - 11$

c) $(f \circ g)(2)$
 $45x - 11$
 $45(2) - 11$
 $90 - 11$
 79

10. $f(x) = 2x-1$ $g(x) = 3x^2-5x+2$

a) $f \circ g = f(g)$
 $= 2(g) - 1$
 $= 2(3x^2 - 5x + 2) - 1$
 $= 6x^2 - 10x + 4 - 1$
 $= 6x^2 - 10x + 3$

b) $g \circ f = g(f)$
 $= 3(f)^2 - 5(f) + 2$
 $= 3(2x-1)^2 - 5(2x-1) + 2$
 $= 3(2x-1)(2x-1) - 10x + 5 + 2$
 $= 3(4x^2 - 2x - 2x + 1) - 10x + 7$
 $= 3(4x^2 - 4x + 1) - 10x + 7$
 $= 12x^2 - 12x + 3 - 10x + 7$
 $= 12x^2 - 22x + 10$

c) $(f \circ g)(2)$
 $6x^2 - 10x + 3$
 $6(2)^2 - 10(2) + 3$
 $6(4) - 20 + 3$
 $24 - 20 + 3$
 $4 + 3$
 7

NOTE: $(\sqrt{x-3})^2 = x-3$

NOTE: $\frac{\sqrt{x-1}}{\sqrt{x-2}}$