

## 4.2 Combining Functions Algebraically

Note Title

16/10/2012

If  $f(x) = \sqrt{x}$  and  $g(x) = 2x + 3$ ,  
find the domain and range of:

a)  $y = f(x) + g(x)$

(same as  $(f+g)(x)$ )

$$y = \sqrt{x} + 2x + 3$$

$$D: x \geq 0$$

$$R: y \geq 3$$

use  
graphing  
calc  $\rightarrow$

b)  $y = (f \cdot g)(x)$

$$y = \sqrt{x}(2x + 3)$$

$$D: x \geq 0$$

$$R: y \geq 0$$

c)  $y = \left(\frac{f}{g}\right)(x)$

$$y = \frac{\sqrt{x}}{2x + 3}$$

$$D: x \geq 0, x \neq -\frac{3}{2}$$

$$R: 0 \leq y \leq 0.2$$

already  
can't  
have negatives

d)  $y = \left(\frac{g}{f}\right)(x)$

$$y = \frac{2x + 3}{\sqrt{x}}$$

$$D: x \geq 0, x \neq 0 \quad x > 0$$

$$R: y \geq 4.9$$

For  $y = x^2 + 3x + 2$ , write two possible functions  
such that a)  $y = f(x) + g(x)$ . b)  $y = (f \cdot g)(x)$

$$f(x) = x^2 + 3x$$

$$g(x) = 2$$

$$f(x) = (x + 2)$$

$$g(x) = (x + 1)$$

$$f(x) = x^2 + 3x + 1$$

$$g(x) = 1$$

$$f(x) = x^3 + x^2$$

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

$$f(x) = 1$$

$$g(x) = x^2 + 3x + 2$$

$$f(x) = \frac{x^2 + 3x + 2}{x + 5}$$

$$g(x) = x + 5$$

OK 😊