

February 26, 2016  
 1.3.1  
 #9)  $\{(-2, y) \mid -3 < \frac{x}{y} < 4\}$

Feb 26-11:04 AM

$y = 3x - 5$

|                |     |
|----------------|-----|
| $x$            | $y$ |
| 0              | -5  |
| 1              | -2  |
| $\frac{10}{3}$ | 5   |

$5 = 3x - 5$   
 $10 = 3x$   
 $\frac{10}{3} = x$

$f(x) = 3x - 5 \rightarrow$  Rule (Software)  
 for find

$f(0) = 3(0) - 5 = -5$

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$\frac{2y}{2} = \frac{3x - 5}{2}$   
 $y = \frac{3x - 5}{2}$   
 $f(x) = \frac{3x - 5}{2}$

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$f(x) = \frac{1}{x=0}$   
 $f(x) = \sqrt{x \geq 0}$

$g(x) = \frac{1}{\sqrt{x}}$   $D: (0, \infty)$

- ①  $x \neq 0$
- ②  $x \geq 0$

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1.5.1  
 #13)  $f(x) = x^2 - 4$ ;  $g(x) = 3x + 6$

Ⓐ  $(f+g)(x) = x^2 - 4 + 3x + 6 = x^2 + 3x + 2$   
 $D: (-\infty, \infty)$

Ⓑ  $(f-g)(x) = x^2 - 4 - (3x + 6) = x^2 - 4 - 3x - 6 = x^2 - 3x - 10$   
 $D: (-\infty, \infty)$

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Ⓒ  $(fg)(x) = (x^2 - 4)(3x + 6) = 3x^3 + 6x^2 - 12x - 24$   
 $D: (-\infty, \infty)$

Ⓓ  $(\frac{f}{g})(x) = \frac{x^2 - 4}{3x + 6} = \frac{(x+2)(x-2)}{3(x+2)} = \frac{x-2}{3}$   
 $D: (-\infty, \infty)$

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Product of Functions  
 $(fg)(x)$  or  $f(x) \cdot g(x)$   
 $(gf)(x)$  or  $g(x) \cdot f(x)$   
 Composite  
 $(f \circ g)(x) = f(g(x))$   
 $(g \circ f)(x) = g(f(x))$

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#17)  $f(x) = \frac{x}{2}$  ;  $g(x) = \frac{2}{x}$   
 $(f+g)(x) = \frac{x}{2} + \frac{2}{x} = \frac{x^2 + 4}{2x=0}$   
 $D: (-\infty, 0) \cup (0, \infty)$   $x=0$   
 $(f-g)(x) = \frac{x}{2} - \frac{2}{x} = \frac{x^2 - 4}{2x}$   
 $D: (-\infty, 0) \cup (0, \infty) = \frac{(x+2)(x-2)}{2x}$   
 $(fg)(x) = \frac{x}{2} \cdot \frac{2}{x} = 1$   
 $(fg)(-5) = \frac{-5}{2} \cdot \frac{2}{-5} = \frac{-10}{-10} = 1$   
 $D: (-\infty, \infty)$   
 $(\frac{f}{g})(x) = \frac{\frac{x}{2}}{\frac{2}{x}} = \frac{x}{2} \cdot \frac{x}{2} = \frac{x^2}{4}$   
 $D: (-\infty, \infty)$

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#18)  $f(x) = x-1$  ;  $g(x) = \frac{1}{x-1}$   
 $(f+g)(x) = \frac{x-1}{1} + \frac{1}{x-1}$   
 $= \frac{(x-1)(x-1) + 1}{x-1}$   
 $= \frac{x^2 - 2x + 1 + 1}{x-1}$   
 $= \frac{x^2 - 2x + 2}{x-1=0}$   
 $D: (-\infty, 1) \cup (1, \infty)$   $x \neq 1$

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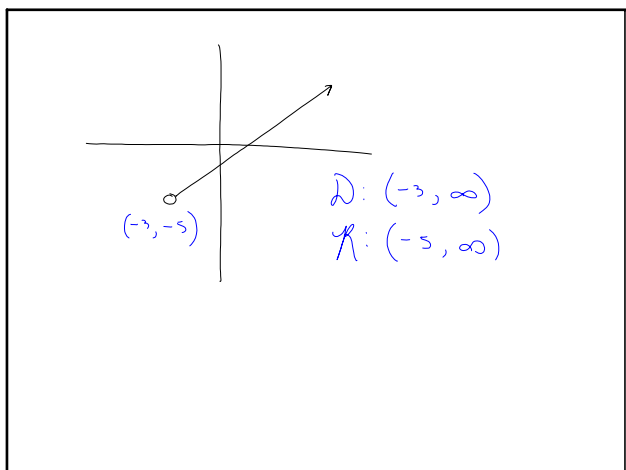
$(\frac{f}{g})(x) = \frac{x-1}{\frac{1}{x-1}} = \frac{(x-1) \cdot (x-1)}{1}$   
 $= x^2 - 2x + 1$   
 $D: (-\infty, \infty)$

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$Q(x_2, y_2)$ ;  $(1, 3)$ ,  $P(-1, -2)$

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$$f(x) = \frac{\sqrt{x-5} \geq 0}{x-5 = 0} \quad x \geq 5$$

$x - 5 = 0 \quad x \neq 5$   
 Domain?  
 $(5, \infty)$

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