DECEMBER 14, 2011

Get out your homework –

Thursday

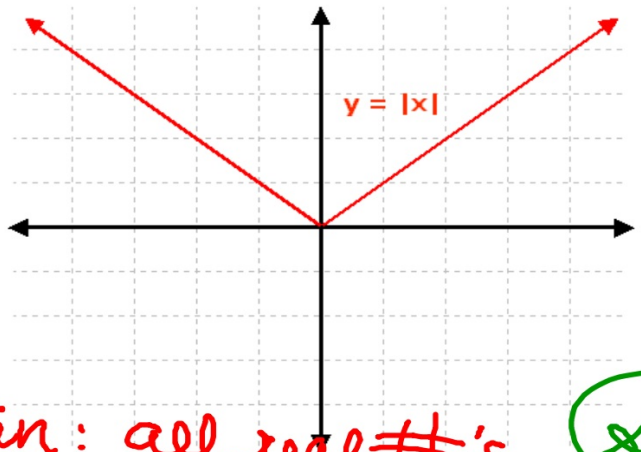
pg 274 18-34 even

pg 288 5-34 all

12/14 - Function Operations, domain/range

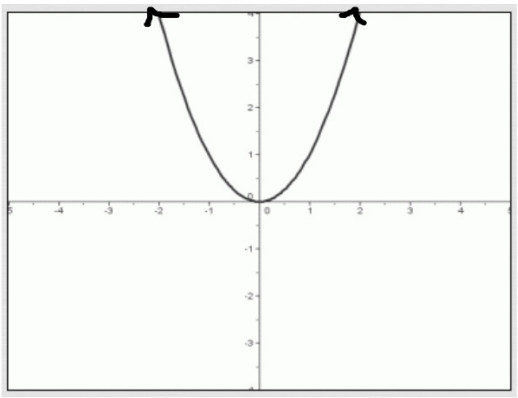
Find the domain and range of each:

x y



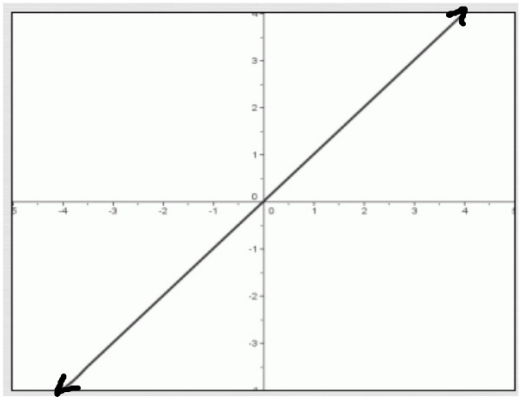
Domain: all real #'s $\mathbb{R}$ $\mathbb{R}$ $\mathbb{R}$

Range: all real # ≥ 0 $\mathbb{R} \geq 0$



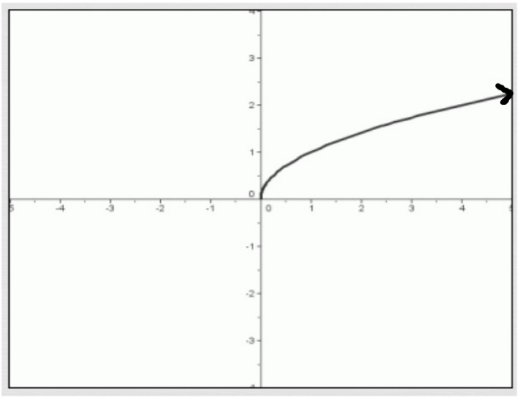
Domain: $\mathbb{R}$

Range: $\mathbb{R} \geq 0$



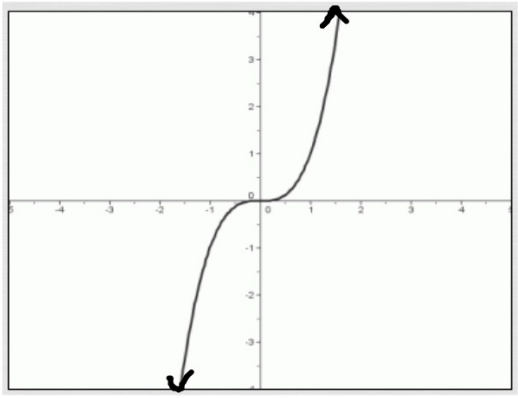
D: $\mathbb{R}$

R: $\mathbb{R}$



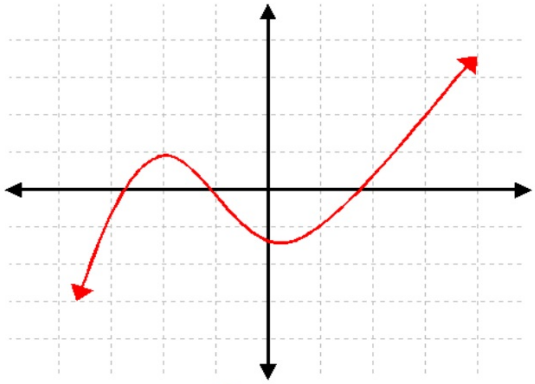
D: $\mathbb{R} \geq 0$

R: $\mathbb{R} \geq 0$



D: $\mathbb{R}$

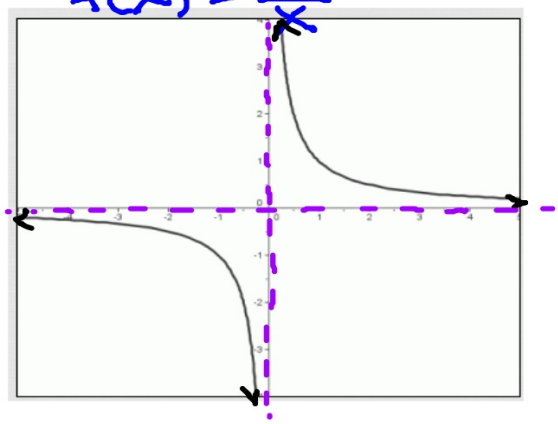
R: $\mathbb{R}$



D: $\mathbb{R}$

R: $\mathbb{R}$

$f(x) = \frac{1}{x}$



D: $\mathbb{R} \neq 0$

R: $\mathbb{R} \neq 0$

Perform the given operations with the functions below:

$$f(x) = 2x - 3 \qquad g(x) = x^2 \qquad h(x) = -4x$$

$f(x) + h(x)$

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

$= -2x - 3$

$g(x) - h(x)$

$= x^2 - (-4x)$

$= x^2 + 4x$

$$f(x) = 2x - 3 \qquad g(x) = x^2 \qquad h(x) = -4x$$

$$g(x) \cdot f(x)$$

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

$$= 2x^3 - 3x^2$$

$$h(x) \div g(x)$$

$$= \frac{-4\cancel{x}}{\cancel{x^2}_{x}}$$

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

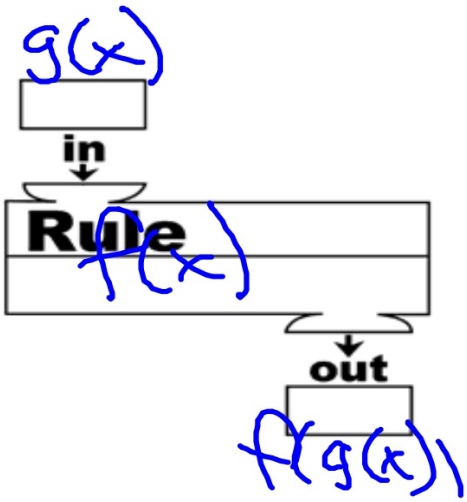
$$f(x) = 2x - 3 \qquad g(x) = x^2 \qquad h(x) = -4x$$

$$f(g(x))$$

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

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

$$= 2x^2 - 3$$



Composite function

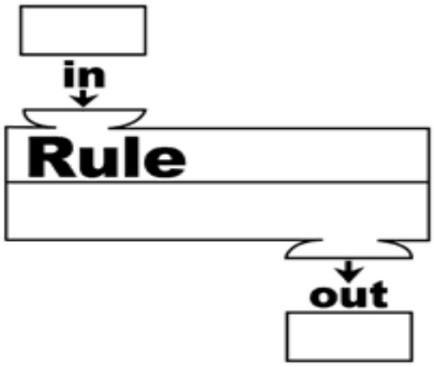
$$f(x) = 2x - 3 \qquad g(x) = x^2 \qquad h(x) = -4x$$

$$f(h(x))$$

$$= f(-4x)$$

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

$$= -8x - 3$$



$$f(x) = 2x - 3 \qquad g(x) = x^2 \qquad h(x) = -4x$$

$g(f(x))$

$= g(2x-3)$

$= (2x-3)^2$ FOIL

$= 4x^2 - 12x + 9$

$g(h(x))$

$= g(-4x)$

$= (-4x)^2$

$= 16x^2$

$$f(x) = 2x - 3 \qquad g(x) = x^2 \qquad h(x) = -4x$$

$$h(f(x))$$

$$= h(2x-3)$$

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

$$= -8x+12$$

$$h(g(x))$$

$$= h(x^2)$$

$$= -4(x^2)$$

$$= -4x^2$$

$f(x) = 2x^2 - x + 1 \qquad g(x) = -2x$

$f(g(x)) = ?$

$= f(-2x)$

$= 2(-2x)^2 - (-2x) + 1$

$= 2 \cdot 4x^2 + 2x + 1$

$= 8x^2 + 2x + 1$

HOMEWORK:

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Due Thurs ?