

Quotients of Functions Jan 8/2015

$$(f \div g)(x) = f(x) \div g(x)$$

Ex.1 Given  $f = \{(1,5), (2,0), (4,-5), (5,11)\}$   
 $g = \{(2,-4), (3,1), (5,0)\}$

(a) determine the domain of  $f$ ,  $g$ , and  $(f \div g)$   
 (b) determine  $(f \div g)$

(a)  $D_f = \{1, 2, 4, 5\}$   $D_g = \{2, 3, 5\}$   
 $D_{f \div g} = \{2, 5\}$

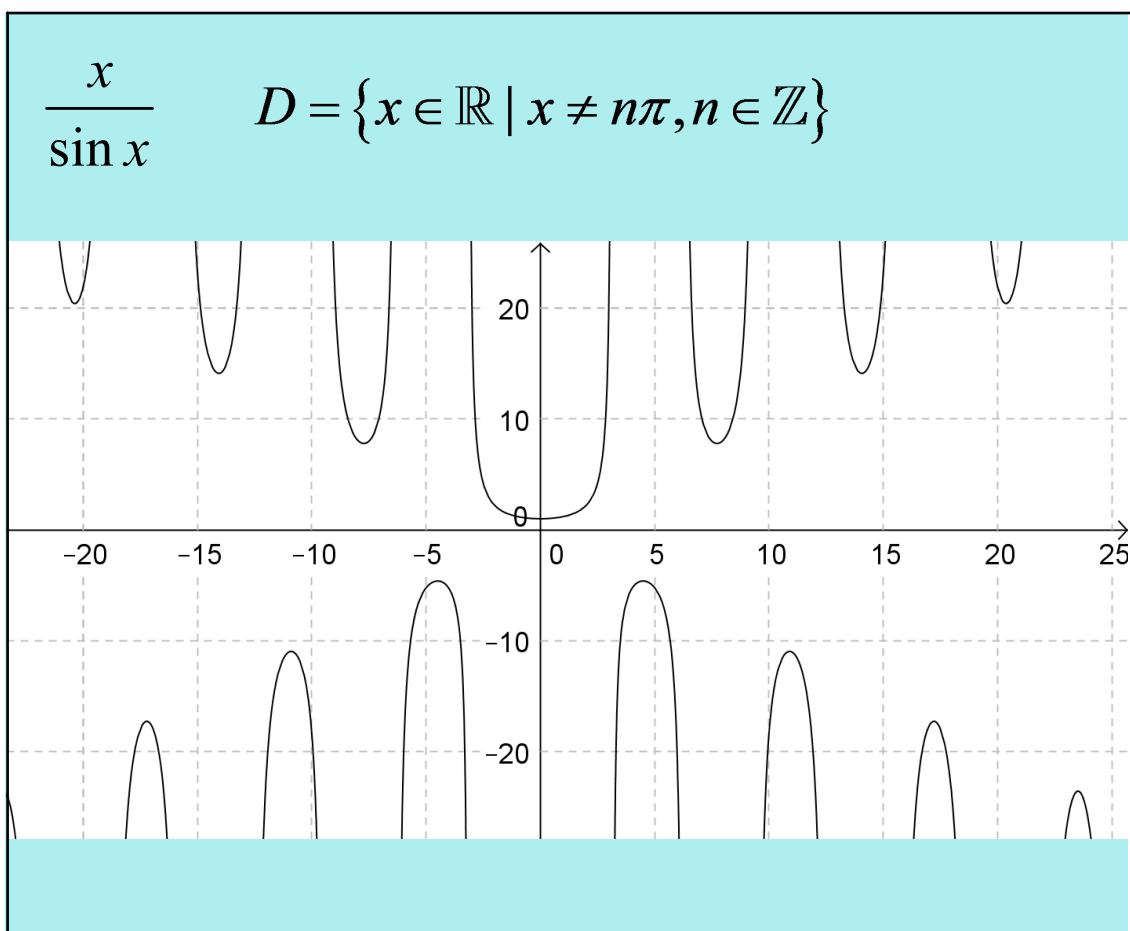
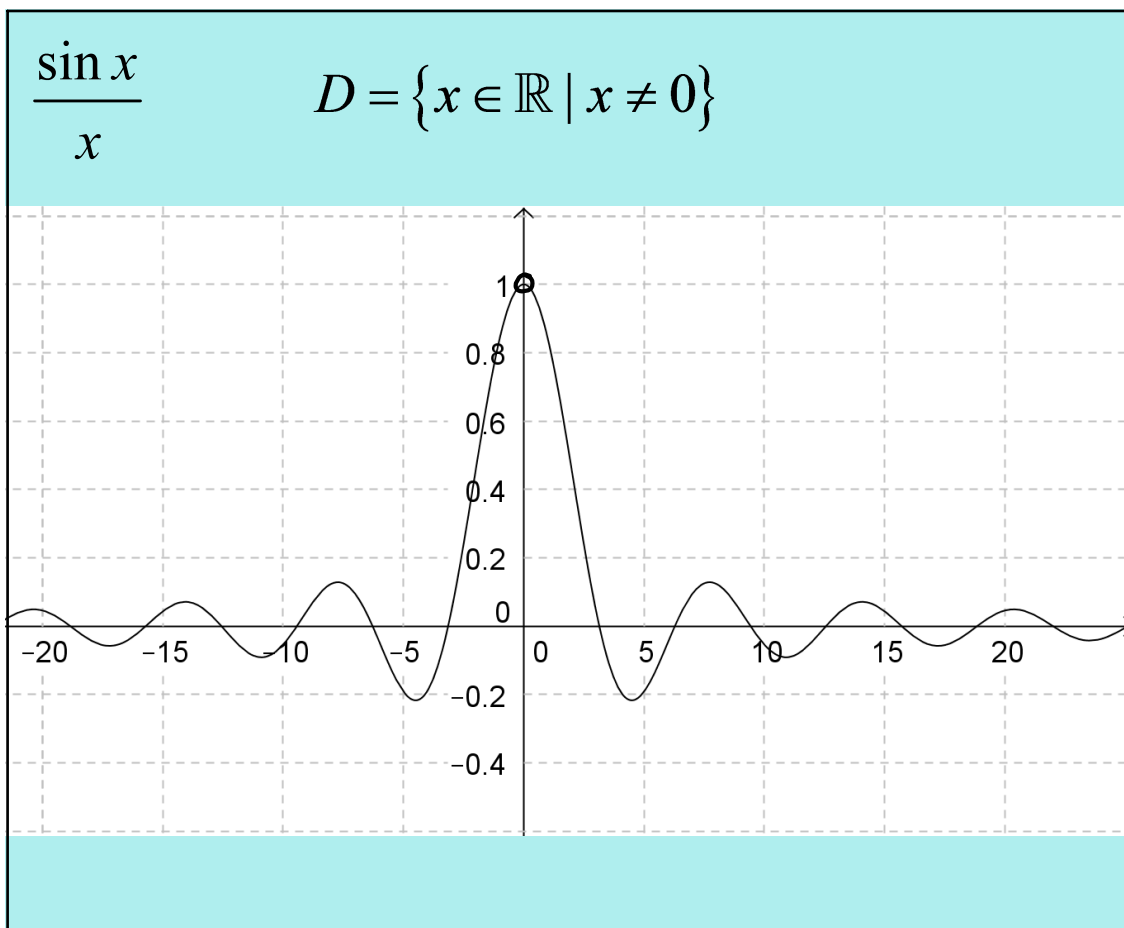
(b)  $f \div g = \{(2,0), (5, \text{undefined})\}$   
*5 should never have been in  $D_{f \div g}$*

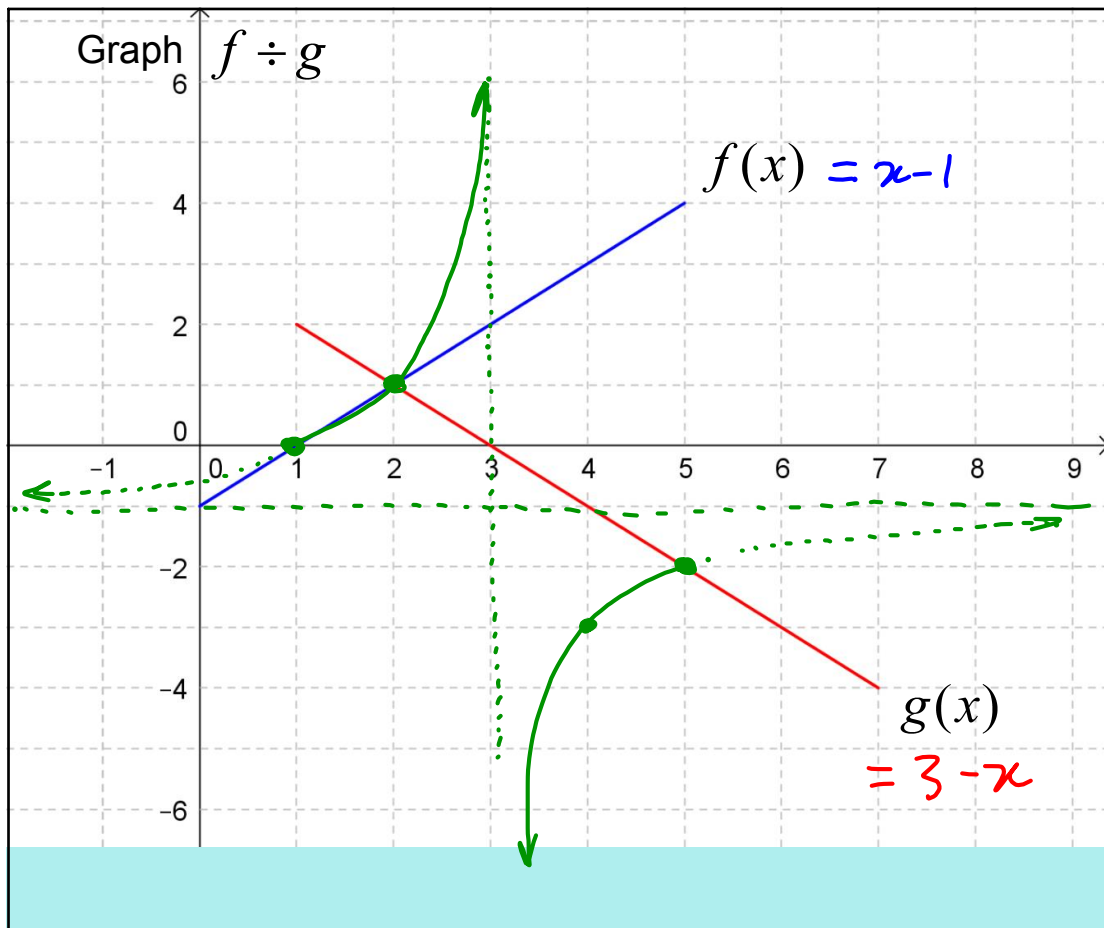
$D_{f \div g} = \{2\}$   
 $f \div g = \{(2,0)\}$

Jan 7-8:29 AM

Note: Since  $g(x)$  is in the denominator, and we must avoid division by zero, the domain has an additional condition:

$$D_{f \div g} = D_f \cap D_g, g(x) \neq 0$$





Assigned Work:  
 p.542 # 1, 2  
 p.544 # 3, 4, 6

$2(f) \leftarrow 1(f) \quad f(x) = x^2, \quad g(x) = \log x$

$D_{f \div g} ?$

$D_f = \{x \in \mathbb{R}\}$

$D_g = \{x \in \mathbb{R} \mid x > 0\}$

$g(x) = 0? \quad x = 1$

$D_{f \div g} = \{x \in \mathbb{R} \mid 0 < x < 1, x > 1\}$

$D_{f \div g} = (0, 1) \cup (1, \infty)$

$\frac{f(x)}{g(x)} = \frac{x^2}{\log x}$

set  $x = 1, \quad \frac{f(1)}{g(1)} = \frac{(1)^2}{\log(1)}$

$= \frac{1}{0}$

Jan 6-9:35 AM

