

CHAPTER 2 Study Guide

1) a) A function f is defined by $f(x) = \frac{Ax+5}{6x-2}$

If $f(1) = 4$, find A .

b) A function g is defined by $g(x) = \frac{A}{x} + \frac{8}{x^2}$

If $g(-1) = 0$, find A .

2) If $f(x) = -5x^2 - 6x$, find:

a) $f(-7)$

b) $f(3a)$

c) $f(x-1)$

3) Find the domain of each function. State your answer in interval notation.

a) $f(x) = \frac{6x}{9x+1}$

b) $f(x) = \sqrt{8-3x}$

c) $f(x) = \frac{x^2}{x^4+7}$

4) Given $f(x) = 7x - 9$ and $g(x) = 4x^2 - 1$, find:

a) $(f \circ g)(-2)$

b) $(g \circ f)(3)$

c) $(f \circ f)(x)$

d) $(g \circ f)(x)$

5) Complete the following table. The first column gives values on the graph of $y = f(x)$. Fill in the rest of the table based on your knowledge of transformations.

$y = f(x)$	$y = f(x+5)$	$y = -3f(x-2)$	$y = 2f(x)+1$	$y = 3f(x-2)+7$
$(0, -7)$				
$(3, -10)$				
$(-2, -8)$				
$(-5, 6)$				

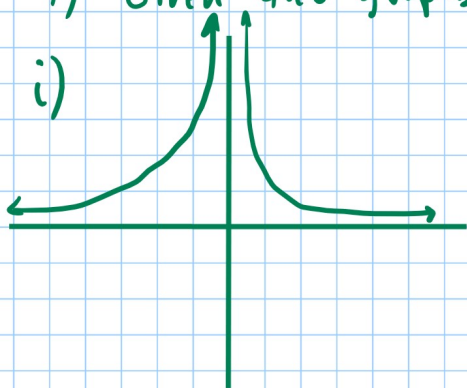
6) i) Given $f(x) = \begin{cases} 3x+4 & -4 \leq x < -1 \\ (x-1)^2 & -1 \leq x < 3 \end{cases}$

- Graph the function
- What is the domain?
- Evaluate $f(-4)$
- Evaluate $f(-1)$
- Evaluate $f(3)$

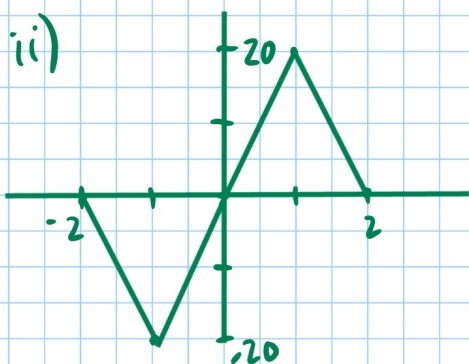
ii) Given $f(x) = \begin{cases} |x| & -3 \leq x < 1 \\ 5 & x = 1 \\ 2x-1 & x > 1 \end{cases}$

- Graph the function
- What is the domain?
- Evaluate $f(-3)$
- Evaluate $f(1)$
- Evaluate $f(3)$

7) Given the graphs, determine



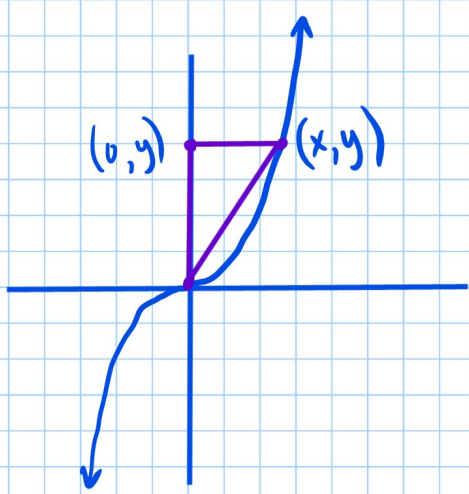
- intercepts
- domain and range
- intervals of increasing and decreasing
- whether it's even, odd or neither



8) A right triangle has one vertex on the graph of $y = x^3$, $x > 0$, at (x, y) , another at the origin, and the third on the positive y -axis at $(0, y)$, as shown in the figure

- Express the Area, A , of the

triangle as a function of x .



- b) What is A when $x = 3$?
- c) Can A be maximized?

9) A rectangle has one corner on the graph of $y = 8 - 2x$, another at the origin, a third on the positive y -axis and a fourth on the positive x -axis.

- a) Draw a picture.
- b) Express the area A of the rectangle as a function of x .
- c) What is the domain of A ?
- d) What value of x maximizes the area?
What is the maximum area?