

Practice Midterm 1

Math 3C: Precalculus

Instructor: David Lenz

Midterm: Thursday October 24 at 8:00 PM in Ledden Auditorium.

Bring your student ID. Do NOT bring a calculator or any formula sheets.

Problem 1 Consider two quantities, u and v , which are related to each other with the following table:

x	4	-2	0	1	6	7	3
f(x)	4	2	3	6	8	4	2

x	2	6	4	1	8	0	3
g(x)	3	2	5	6	-1	4	1

Determine the following:

(a) What is $f(g(0))$?

(b) What is $g(f(0))$?

(c) What is $f(f(1))$?

(d) What is $f(g^{-1}(1))$?

Problem 2 Determine where the lines described by $a(x) = \frac{3}{4}x - 2$ and $b(x) = \frac{-5}{4}x + 4$ intersect and write your answer as a coordinate pair. Are these two lines perpendicular?

Problem 3 What is the range of $h(z) = -\sqrt{x+2}+1$? Write your answer in inequality notation.

Problem 4 Let $h(s) = \frac{|2s^2-1|}{s^2-1}$ and $g(s) = \sqrt{s+1}$.

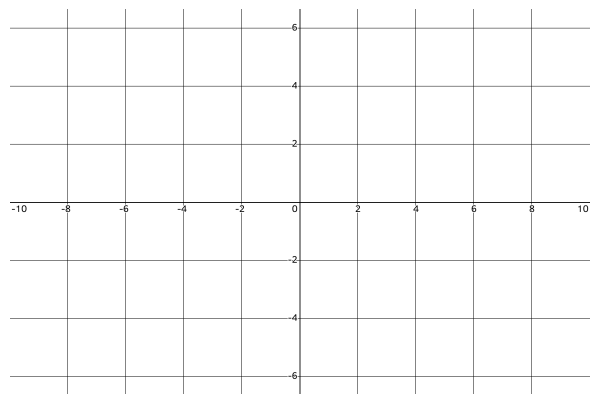
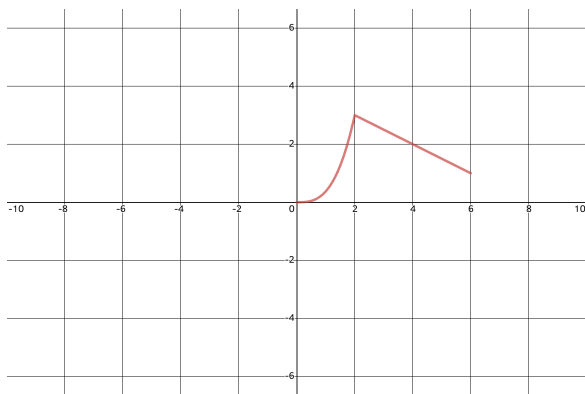
(a) What is the domain of $h(s)$? Write your answer in inequality or interval notation.

(b) What is the domain of $g(s)$? Write your answer in inequality or interval notation.

(c) Determine a formula for $(h \circ g)(s)$.

- (d) What is the domain of $(h \circ g)(s)$? Write your answer in inequality or interval notation.

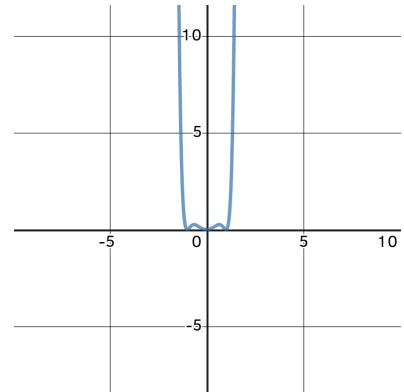
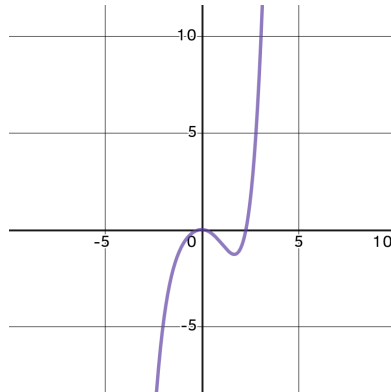
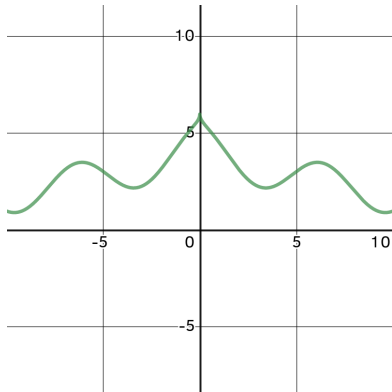
Problem 5 Consider the graph of $r(k)$ below. Sketch the graph of $r(2k + 4) - 2$.



Problem 6 Is $f(t) = \frac{3}{t^2-1}$ a one-to-one function? Why or why not?

Problem 7 Solve the inequality $|3x + 8| < 4$ for x . Write your answer in inequality and interval notation.

Problem 8 Which of the following could be the graph of $r(y) = 2y^8 - 3y^6 + y^2$?



Problem 9 Let $f(x) = -(x + 2)^2 - 3$

(a) Sketch $f(x)$

(b) Describe the region where f is non-decreasing using inequality notation

(c) Restricting the domain of f to the region in part (b), determine the formula for $f^{-1}(x)$.