Autumn 2018

Form C

Name: _____

Signature: _____

OSU name.#: _____

Lecturer: _____

Recitation Instructor: _____

Recitation Time: _____

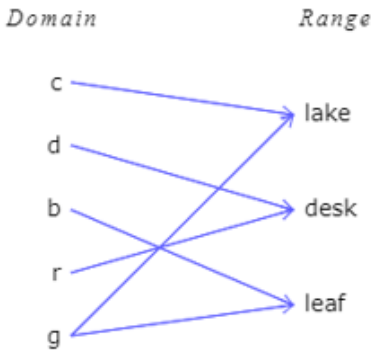
MATH 1075 Midterm Exam 3

Instructions:

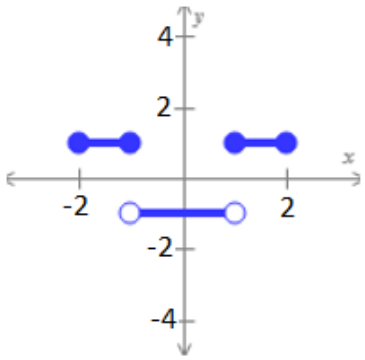
- Show ALL work to receive full credit. Answers with insufficient supporting work will receive little or no credit.
- You have 55 minutes to complete this exam.
- Write clearly and legibly. Illegible answers and ambiguous markings will not receive credit.
- Completely simplify all answers.
- Please CIRCLE your answers.

Page:	2	3	4	5	6	Total
Points:	20	15	21	27	17	100
Score:						

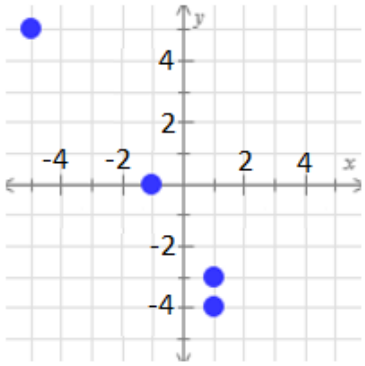
1. Below you are shown three relations: Relation A, Relation B, and Relation C.



Relation A



Relation B



Relation C

(a) (6 points) Write the letter (A, B, and/or C) of each relation above that <u>is</u> a function.

(b) (3 points) Circle the answer that gives the <u>domain</u> of relation B.

A. $\{-2,-1,0,1,2\}$

B. $[-2,-1)\cup(-1,1)\cup(1,2]$

C. $[-2,2]$

D. $[-2,-1]\cup[1,2]$

E. None of the above

(c) (2 points) Write one number that is in the <u>range</u> of Relation C.

2. (9 points) Circle True if the statement is true; circle False if the statement is false.

(a) True or False: The expressions $5^{m/n}$ and $\sqrt[n]{5^m}$ have the exact same numerical value, for any $m > 0$ and $n > 0$.

(b) True or False: Since $x = 3$ is a restricted value of $\dfrac{1}{x-3}$, we know $x = 3$ is **<u>not</u>** in the domain of $f(x) = \dfrac{1}{x-3}$.

(c) True or False: $s^{2/3} \cdot s^{1/2} = s^{1/3}$, for any value $s \geq 0$.

3. (15 points) Suppose $f(x) = 5x - 1$ and $g(x) = \dfrac{3}{x+2}$. Find each of the following. Simplify and circle your final answers.

(a) $(f+g)(-1)$

(b) $\left(\dfrac{g}{f}\right)(1)$

(c) $(fg)(2)$

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

(e) $\sqrt{f(4)}$

4. (6 points) Simplify. Your final answer should have only positive exponents.

$$\frac{Q^{\frac{6}{5}}Q^{\frac{1}{2}}}{Q^{-\frac{1}{5}}}$$

5. (15 points) Simplify each expression. Show your work!

(a) $4\sqrt{112}+\sqrt{28}$

(b) $3\sqrt{44}-\sqrt{40}$

6. (18 points) Simplify each expression. Assume that all of the variables in the expression represent positive real numbers.

   (a) $\sqrt[4]{108x^3y^{11}z^{16}}$

   (b) $\sqrt{3av^9} \cdot \sqrt{15a^2v^4}$

7. (9 points) Solve the quadratic equation by **completing the square**. If there is more than one solution, separate them with commas. (Do NOT use the Quadratic Formula.)

   $4x^2 + 8x - 48 = 0$

8. (6 points) Rationalize the denominator and simplify.

$$\frac{8}{\sqrt[5]{7^2}}$$

9. (11 points) Solve for p. Assume p is a real number.

$$\sqrt{-2p+12} = p-2$$

THIS PAGE INTENTIONALLY LEFT BLANK.
Nothing written on this page will be graded, but you may use it as scratch paper.