Print Name: _____

OSU Name.#: _____

Instructor: _____

Signature: _____

MATH 1075

Midterm Exam 3

Autumn 2019

Instructions:

- You have 55 minutes to complete this exam.

- When applicable, mark answer bubbles completely like this ●, NOT like this ⊛ or ⊘.

- Circle or box all other final answers.

- A calculator may be used given the calculator policy outlined in the syllabus. Even if a calculator is used, you must show all work on each problem to receive full credit.

- Write clearly and legibly to receive credit.

- Do not round; give only exact answers (unless specified otherwise).

Problem 1. Graphs of two functions, $f(x)$ and $g(x)$, are given below. The graph of $f(x)$ is solid, and the graph of $g(x)$ is dashed. Use the graphs of the two functions to fill in the blanks below. (12 pts)

$g(0) = $ _____

$(fg)(3) = $ _____

$(f + g)(-1) = $ _____

$(g \div f)(0) = $ _____

$(f - g)(1.5) = $ _____

$(g \circ f)(0) = $ _____
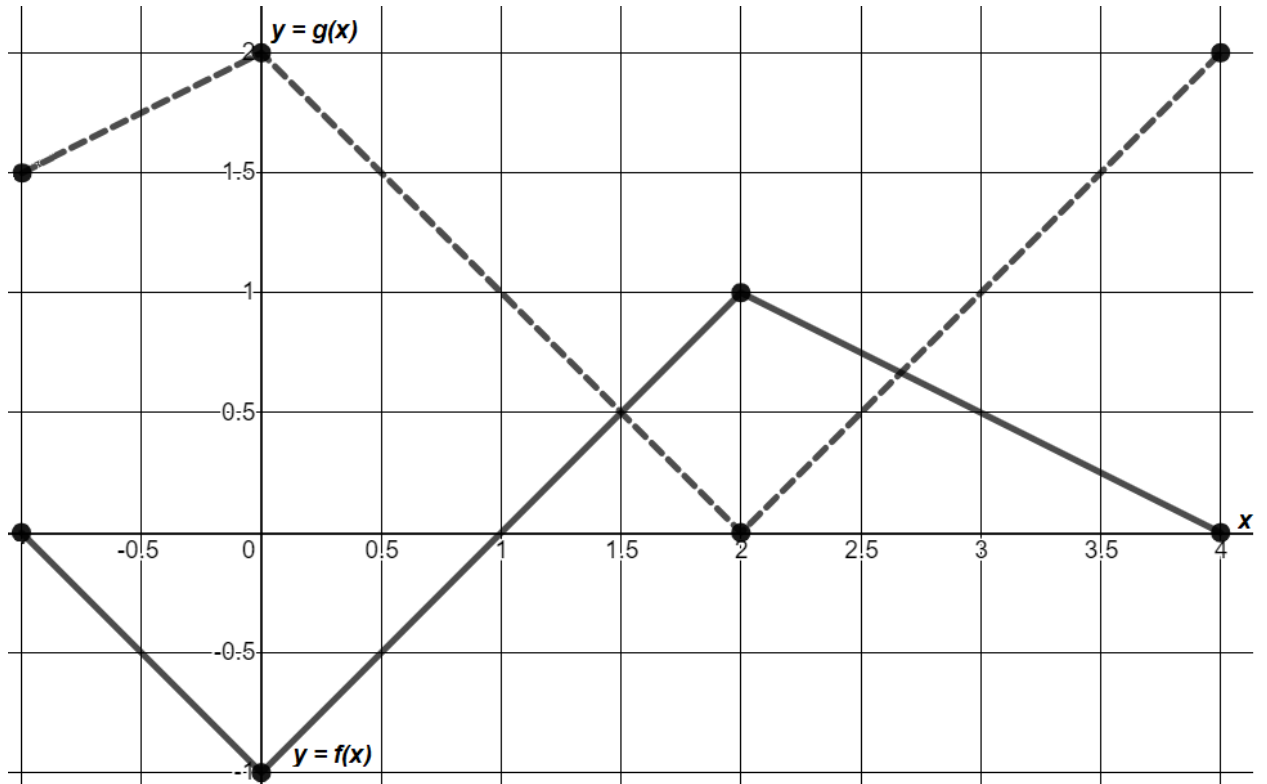
Problem 2. Graphs of two relations, Relation A and Relation B, are given below. (8 pts)
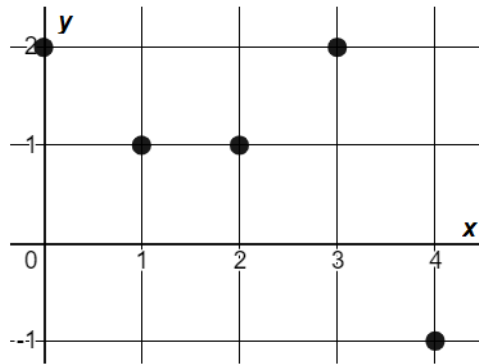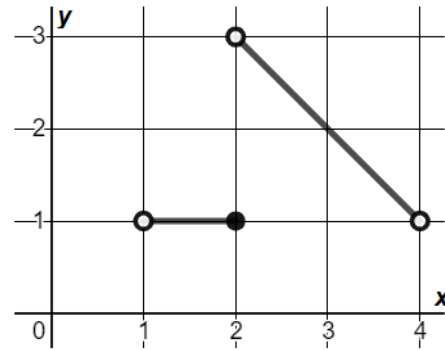
Relation A   Relation B

(a) Select the statement that is true.
- ◯ Relation A is a function, but Relation B is not.
- ◯ Relation B is a function, but Relation A is not.
- ◯ Both Relation A and Relation B are functions.
- ◯ Neither Relation A nor Relation B are functions.

(b) Which of the following represents the domain of Relation A?
- ◯ $[1,2]$
- ◯ $\{-1,1,2\}$
- ◯ $[1,4]$
- ◯ $\{0,1,2,3,4\}$

(c) Which of the following represents the range of Relation B?
- ◯ $\{1,2,3\}$
- ◯ $[1,3)$
- ◯ $\{1,2,3,4\}$
- ◯ $(1,4)$

(d) Fill in the blank so that the ordered pair (x,y) is included in Relation B: (___, 2). Select your answer from the options below.
- ◯ 1
- ◯ 2
- ◯ 3
- ◯ 4

Problem 3. Simplify. Assume that the variable represents a positive real number. (8 pts)

$$\left(\frac{1}{32x^5}\right)^{-2/5}$$

Problem 4. Simplify. Assume all variables represent positive real numbers. (10 pts)

$$\sqrt[4]{81x^{19}z^{17}}$$

Problem 5. Simplify. Assume all variables represent positive real numbers. (8 pts)

$$x\sqrt{75xv^2} + 7v\sqrt{27x^3}$$

Problem 6. Solve for y, where y is a real number. (11 pts)

$$y - 4 = \sqrt{-4y + 37}$$

Problem 7. Solve for w, where w is a real number. (8 pts)

$$(w - 7)^2 - 20 = 0$$

Problem 8. Simplify. Assume the variable represents a positive real number. (10 pts)

$$2\sqrt[3]{500x^4} - \sqrt[3]{256x^4}$$

Problem 9. Simplify. Assume all variables represent positive real numbers. Be sure to rationalize the denominator. (9 pts)

$$\sqrt{\frac{7h^2k^4}{32}}$$

Problem 10. Simplify. Assume the variable represents a positive real number.
(8 pts)

$$10\sqrt[5]{x^4} \cdot 6\sqrt{x}$$

Problem 11. Rationalize the denominator and simplify. Assume that the variable
represents a positive real number. (8 pts)

$$\frac{-3}{3\sqrt{w}+4}$$