

Course: MAT190 (Precalculus Mathematics)**Teacher:** David Smith**Semester:** Fall 2020**Test 2** (Written Part)**Test Period:** From Wednesday October 21st at 11 am to Monday October 26th at 10 am.

Notes:

- This exam has 6 questions, for a total of 36 marks.
 - Answer to all questions, and give clear and complete justifications, unless stated otherwise.
 - This take-home evaluation **must be submitted via Moodle before Monday October 26th at 10 am.**
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Pledge of Honor in MAT190 for Test 2

I pledge to uphold the highest standards of ethics and academic integrity while I am a student in MAT 190 at Bishop's University. I will not violate the Bishop's University regulations on Academic Integrity and Plagiarism located on page 19 in the Academic Calendar. Cheating on exams, plagiarizing or any other form of academic dishonesty are clear violations of these regulations. I will abide by the rules my instructor has provided for this assessment. This means that I will treat the exam as if I were writing it in class under normal circumstances with no outside assistance: internet or people including my peers.

Signature: _____

Date: _____

Question 1. (6 marks)

Solve the following equations. Show your work!

a)
$$\frac{3x-10}{x+2} = \frac{x-4}{2x}$$

b) $3 + \frac{x-5}{6-x} = \frac{1}{2}$

Question 2. (5 marks)

Consider the equation

$$3y^2x = 3x + 9y^2 + 4.$$

- a) Find the x -intercept(s) of this equation, if any. (Give both coordinates.)

b) Find the y -intercept(s) of this equation, if any. (Give both coordinates.)

Question 3. (10 marks)

Consider the equation

$$\begin{cases} -y + 1 = -3x^2 + 2x & \text{(Equation (1))} \\ 0 = 4x - y - 2 & \text{(Equation (2))} \end{cases}$$

a) Complete the following sentences by choosing the right statement. No justification required.

i) The graph of Equation (1) is:

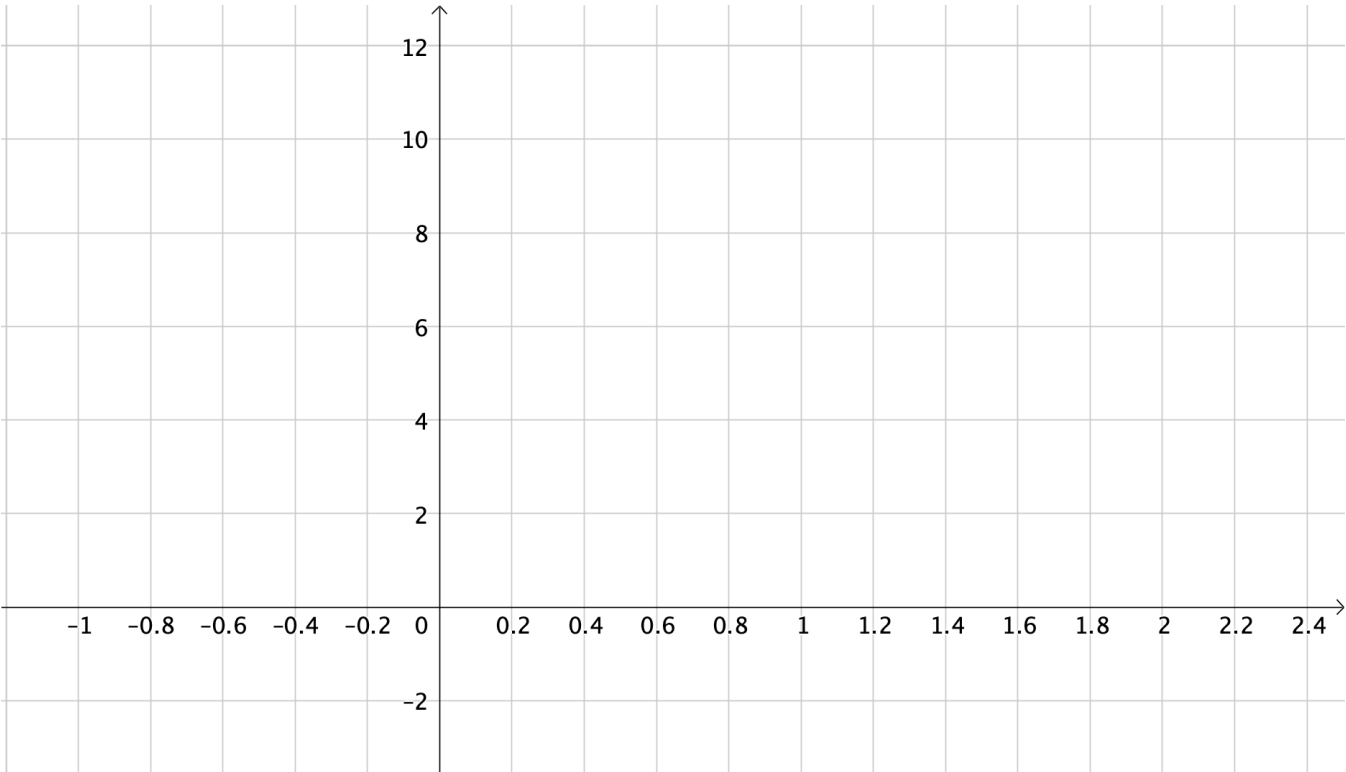
- A straight line having a positive slope
- A straight line having a negative slope
- A parabola curving upward
- A parabola curving downward
- None of the above

ii) The graph of Equation (2) is:

- A straight line having a positive slope
- A straight line having a negative slope
- A parabola curving upward
- A parabola curving downward
- None of the above

b) Do the graphs of Equations (1) and (2) intersect? If yes, find all points of intersection. (Show your work!)

c) Find at least 3 solutions to each of the Equations (1) and (2), and graph them in the provided cartesian plane.



Question 4. (4 marks)

Find c such that the points $(-1, 3)$, $(2, -4)$ and $(c, 7)$ all lie on a common straight line. (Show your work!)

Question 5. (5 marks)

The length of a rectangular pool is 3 meters less than twice its width. If the pool's perimeter is 66 meters, find its length and width.

(To answer this question, first define the necessary variables and set up the necessary equation(s). Show your work!)

Question 6. (6 marks)

Tessa has 48 ft of fencing available to construct a fence that will divide her garden in two rectangular sections as shown in the figure. Find the largest total area that can be enclosed.

(To answer this question, first define the necessary variables and set up the necessary equation(s). Show your work!)

