

COLLEGE ALGEBRA QUIZ

- (1) Solve the following non-linear system of equations.

Solution: (a)

$$x^2 - 8y = 0$$

$$x^2 - y^2 = 16$$

(a) $(4\sqrt{2}, 4), (-4\sqrt{2}, 4)$

(b) $(8\sqrt{2}, 8), (-8\sqrt{2}, 8)$

(c) $(2\sqrt{2}, 2), (-2\sqrt{2}, 2)$

(d) $(6\sqrt{2}, 6), (-6\sqrt{2}, 6)$

- (2) Solve the following non-linear system of equations.

(8, 4)

$$x^2 - y^2 = 48$$

$$x + y = 12$$

- (3) Solve the following non-linear system of equations.

(0, -4), (2, 0)

$$x^2 - y = 4$$

$$2x - y = 4$$

- (4) Solve the following non-linear system of equations.

(2, 0), (-2, 0), ($\sqrt{5}$, 1), ($-\sqrt{5}$, 1)

$$x^2 - y^2 = 4$$

$$y = x^2 - 4$$

- (5) Solve the following non-linear system of equations.

(2, 9), (2, -9), (-2, 9), (-2, -9)

$$x^2 + y^2 = 85$$

$$2x^2 - 3y^2 = -235$$

- (6) The sum of two numbers is 12, and the sum of their squares is 80. Find the numbers.

8, 4

- (7) What are the dimensions of a rectangle whose perimeter is $42m$ and area is $104m^2$?

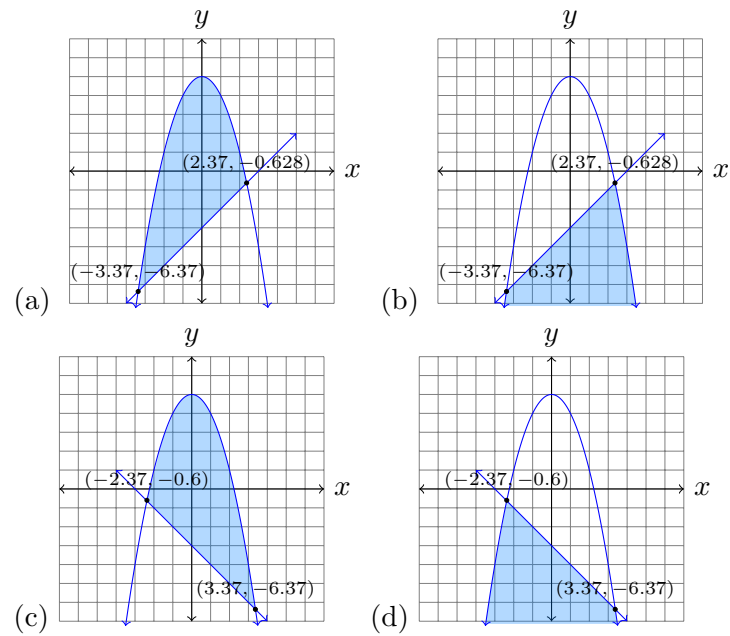
Solution: 8m by 13m

- (8) Which of the following graphs represents the system of inequalities and the points at which they intersect?

Solution: (a)

$$y \leq 5 - x^2$$

$$x - y \leq 3$$

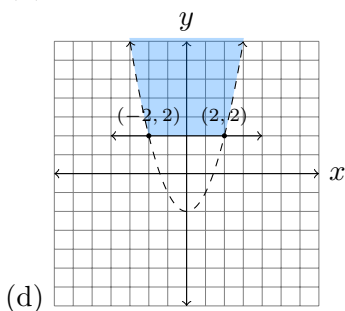
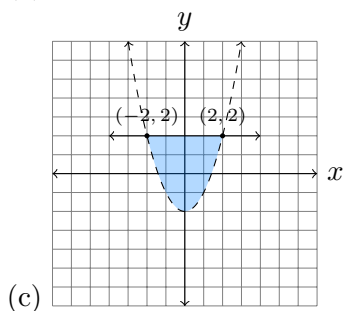
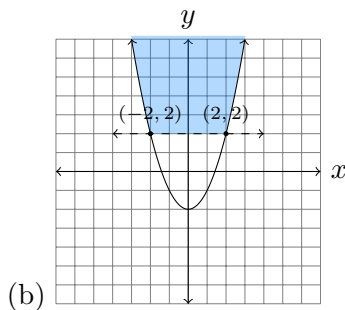
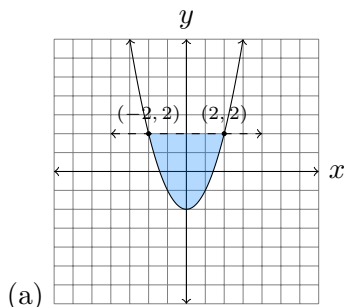


- (9) Which of the following graphs represents the system of inequalities and the point at which they intersect?

Solution: (a)

$$y \geq x^2 - 2$$

$$y < 2$$

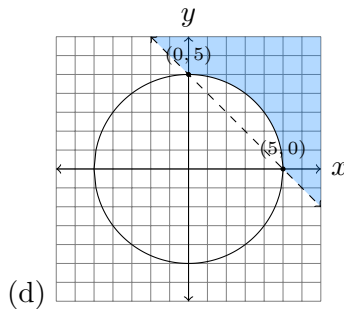
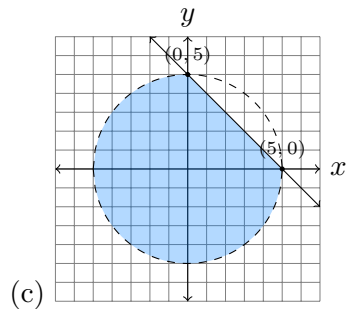
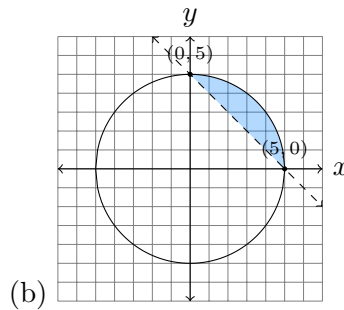
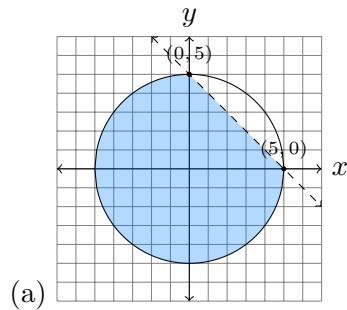


- (10) Which of the following graphs represents the system of inequalities and the point at which they intersect?

Solution: (a)

$$x^2 + y^2 \leq 25$$

$$x + y < 5$$

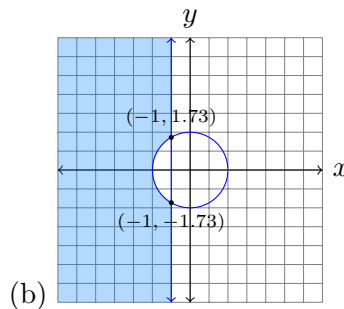
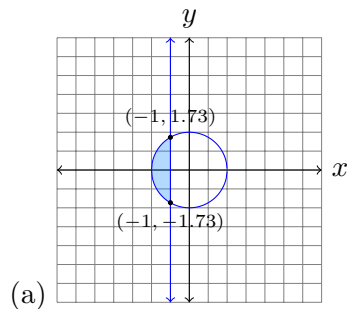


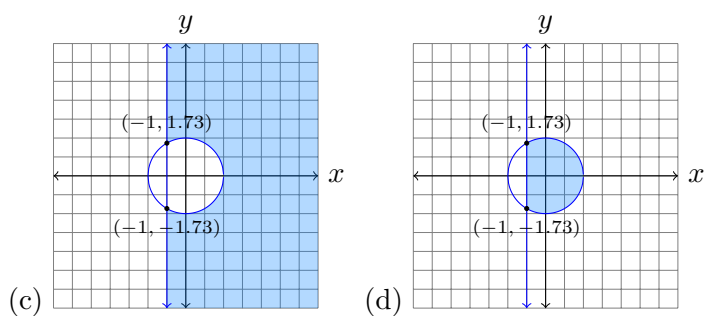
- (11) Which of the following graphs represents the system of inequalities and the point at which they intersect?

Solution: (a)

$$x^2 + y^2 \leq 4$$

$$x \leq -1$$





- (12) Which of the following is true regarding the solutions of a nonlinear system of equations?

Solution: (v)

- (a) One can only visualize the real solutions.
 - (b) One can always visualize all solutions.
 - (c) One can only visualize imaginary solutions.
 - (d) One can not visualize imaginary solutions.
- (i) Solution is (a) only.
 - (ii) Solution is (b) only.
 - (iii) Solution is (c) only.
 - (iv) Solution is (d) only.
 - (v) Solution is (a) and (d).
 - (vi) None of the above.