



Towheed Iranian School

(International Section)

First Term, Final Exams

2015-2016

Subject: Math (Algebra2)

Date:4/1/ 2016

Name: _____ Grade: 10 , Section (D)

Exam Time: 90 min.

Mark

40

- You are allowed to use a calculator for this exam.
- Answer all questions in the space provided .Be sure to put your name on the top of any extra pages you use.
- Full marks are not necessarily awarded for a correct answer with no working. Answers must be supported by working and/or explanations.

1- Solve each inequality and graph the solution set on a number line:

$$28 > 6k + 1 > 16$$

$$4r + 3 < -6 \text{ or } 3r - 7 < 2$$

[Total : 6 marks]

2- Use a matrix equation (Inverse matrix method) to solve the following system of equation:

$$\begin{aligned}x + y &= 4 \\ -4x + y &= 9\end{aligned}$$

[Total : 5 marks]

3- Simplify;

$$i^4 =$$

$$\sqrt{-3} =$$

[Total : 2 marks]

4- Solve each system of equations by :

$$a - 3b = -22 \quad (\text{by substitution})$$

$$4a + 2b = -4$$

[Total : 5 marks]

a) $8a - 3b = -11$ (by elimination)
 $5a + 2b = -3$

[Total : 5 marks]

5- Write a quadratic equation in standard form with $1 + i$ and $1 - i$ as its roots.

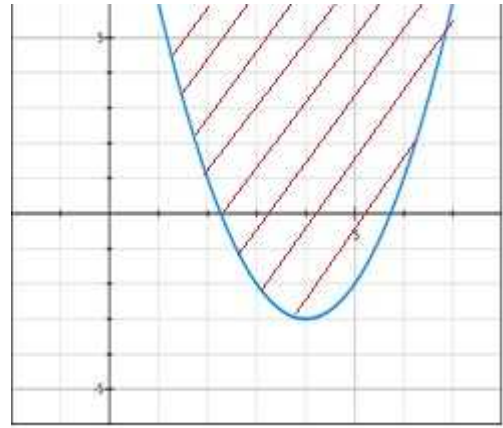
[Total : 5 marks]

6- Simplify:

$$(3x^2 \cdot (x \cdot y^3)^{-2})^3 =$$

[Total : 5 marks]

7- Write a quadratic inequality by using the given graph:



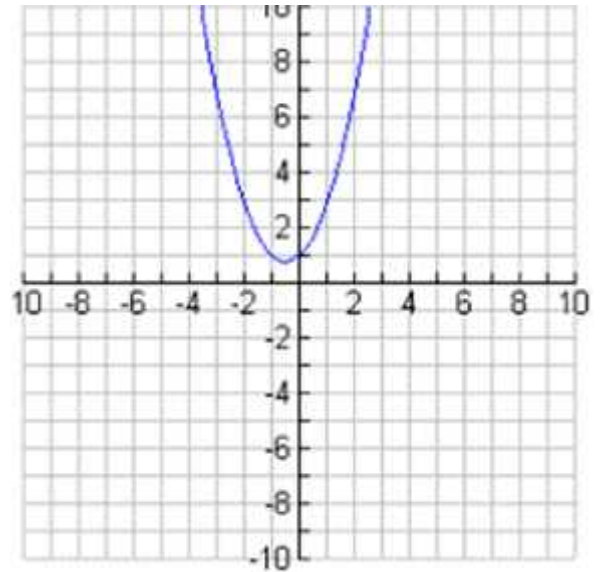
[Total : 3 marks]

8- Solve $x^2 - 3x - 18$ Algebraically

[Total: 4 marks]

9- Graph following function by transformation of the given graph.

$$y = -3(x - 5)^2 - 2$$



[Total : 3 marks]

10- The U.S. Department of Transportation limits the time a truck driver can work between periods of rest to ten hours. For the first part of his shift, Tom drives at a speed of 60 miles per hour, and for the second part of the shift, he drives at a speed of 70 miles per hour. Write a polynomial to represent the distance driven.

[Total : 3 marks]

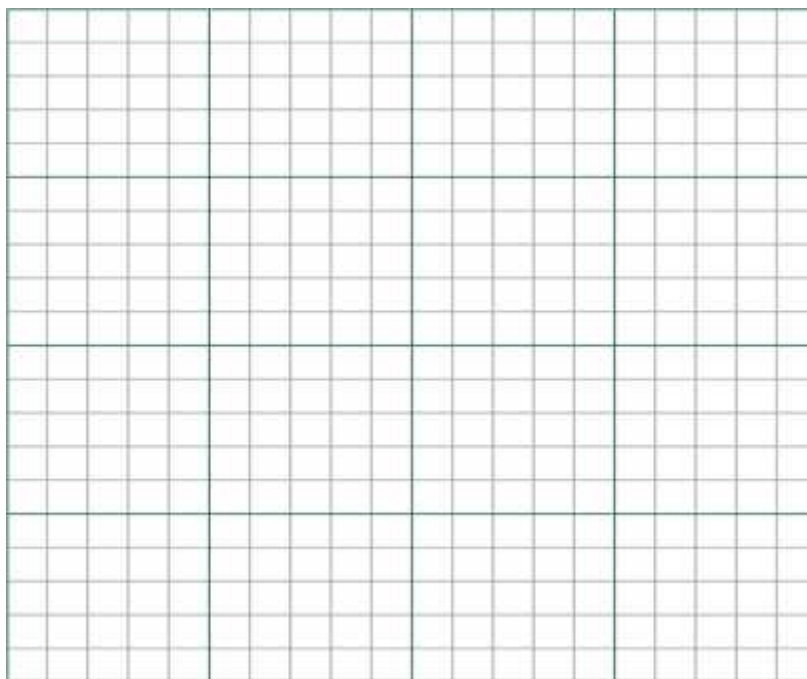
11- Consider the $f(x) = -2x^2 - 2x + 12$:

a) Find y-intercept, equation for axis of symmetry

b) The coordinates for vertex, X-intercept(s).

c) Graph it completely

d) Domain and range



[Total : 5 marks]

12- Solve the following system of equations:.

a) $X + 5y = 3$ (by Crammer's rule)
 $3x - 2y = - 8$

[Total: 4 mark]

b) $3y - 5z = -23$
 $4x + 2y + 3z = 7$
 $-2x - y - z = -3$

[Total : 4 mark]

1 - The diagram shows part of the graph of $y = a(x - h)^2 + k$. The graph has its vertex at P, and passes through the point A with coordinates (1, 0).

(a) Write down the value of

(i) h ;

(ii) k .

(b) Calculate the value of a .

