

## حل تجميعية 1 القسم الالكتروني وفق الهيكل الوزاري منهج ريفيل



### تم تحميل هذا الملف من موقع المناهج الإماراتية

موقع المناهج ← المناهج الإماراتية ← الصف الحادي عشر المتقدم ← رياضيات ← الفصل الثاني ← ملفات متنوعة ← الملف

تاريخ إضافة الملف على موقع المناهج: 23:33:09 2025-03-15

ملفات اكتب للمعلم اكتب للطالب ا اختبارات الكترونية ا اختبارات ا حلول ا عروض بوربوينت ا أوراق عمل منهج انجليزي ا ملخصات وتقارير ا مذكرات وبنوك ا الامتحان النهائي للمدرس

المزيد من مادة رياضيات:

إعداد: Dsouza Daryl Justin

### التواصل الاجتماعي بحسب الصف الحادي عشر المتقدم



صفحة المناهج الإماراتية على فيسبوك

الرياضيات

اللغة الانجليزية

اللغة العربية

التربية الاسلامية

المواد على تلغرام

### المزيد من الملفات بحسب الصف الحادي عشر المتقدم والمادة رياضيات في الفصل الثاني

حل بالخطوات أسئلة امتحان نهائي سابق القسم الالكتروني المسار النخبة

1

حل بالخطوات أسئلة امتحان نهائي سابق منهج ريفيل القسم الالكتروني

2

حل النموذج التدريبي للاختبار النهائي وفق الهيكل الوزاري منهج بريدج

3

النموذج التدريبي للاختبار النهائي وفق الهيكل الوزاري منهج بريدج

4

تجميعية تدريبات وفق الهيكل الوزاري حسب منهج بريدج

5



# ***G11Adv EoT2 Practice Exam I***

## ***Part I Electronic (MCQ)***



11Adv Part 1 Multiple Choice | MCQ | EoT2 | Trigonometry, matrices, conics & vectors | Q1 - Q15 |

Best Math • 388 views • 6 days ago

<https://youtu.be/dBMrjqM9 N4>





**Question 1:** Use trigonometric identities to simplify expressions.

Simplify each expression.

1)  $\frac{1 - \sin^2 \theta}{\sin^2 \theta}$

A)  $2 \cos^2 \theta$

B)  $\cos^2 \theta$

C)  $\cot^2 \theta$

D)  $\sec \theta$

2)  $2(\csc^2 \theta - \cot^2 \theta)$

A) 1

B) 2

C) 3

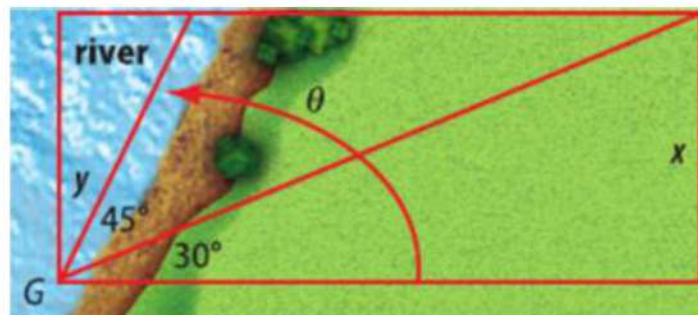
D) 4



**Question 2:** Find values of sine and cosine by using sum and difference identities.

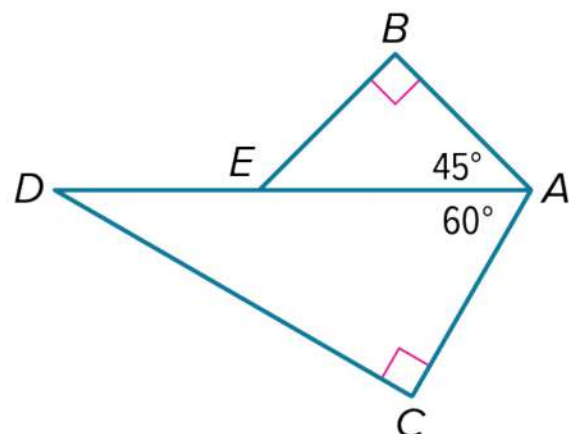
- 1) A geologist measures the angle between one side of a rectangular lot and the line from her position to the opposite corner of the lot as  $30^\circ$ . She then measures the angle between that line and the line to the point on the property where a river crosses as  $45^\circ$ . She stands 100 meters from the opposite corner of the property. How far she's from the point at which the river crosses the property line?

- A) 49.2 meters  
B) 50 meters  
C) 51.8 meters  
D) 65.4 meters



- 2) A design consists of two triangular areas, as shown in the diagram. a. What is the exact value of the sine of angle BAC?

- A)  $\frac{\sqrt{6}-\sqrt{2}}{4}$   
B)  $-\frac{\sqrt{6}-\sqrt{2}}{4}$   
C)  $\frac{\sqrt{6}+\sqrt{2}}{4}$   
D)  $-\frac{\sqrt{6}+\sqrt{2}}{4}$





**Question 3:** Find values of sine and cosine by using sum and difference identities.

Find the exact value of each expression.

1)  $\sin \frac{\pi}{12}$

A)  $\frac{\sqrt{6}+\sqrt{2}}{4}$

B)  $\frac{\sqrt{2}-\sqrt{6}}{4}$

C)  $\frac{\sqrt{2}+\sqrt{6}}{4}$

D)  $\frac{\sqrt{6}-\sqrt{2}}{4}$

2)  $\sec 1275^\circ$

A)  $\sqrt{2} + \sqrt{6}$

B)  $\sqrt{2} - \sqrt{6}$

C)  $-2 + \sqrt{3}$

D)  $2 - \sqrt{3}$





**Question 4:** Find values of sine and cosine by using half-angle identities.

Find the exact values of  $\sin 2\theta$ ,  $\cos 2\theta$ ,  $\sin \theta/2$ , and  $\cos \theta/2$ .

1) Find the exact value of  $\sin 2\theta$

$$\cos \theta = \frac{3}{5}; \quad 270^\circ < \theta < 360^\circ$$

A)  $-\frac{12}{13}$

B)  $\frac{24}{25}$

C)  $\frac{7}{25}$

D)  $-\frac{24}{25}$

2) Find the exact value of  $\sin \theta/2$

$$\tan \theta = -\frac{8}{15}; \quad 90^\circ < \theta < 180^\circ$$

A)  $-\frac{240}{289}$

B)  $\frac{161}{289}$

C)  $\frac{4\sqrt{17}}{17}$

D)  $\frac{\sqrt{17}}{17}$

**Question 5: Find inverses of  $2 \times 2$  and  $3 \times 3$  matrices.**

Find  $A^{-1}$ , if it exists. If  $A^{-1}$  does not exist, write singular.

1)  $A = \begin{bmatrix} 8 & 5 \\ 6 & 4 \end{bmatrix}$

A)  $A^{-1} = \begin{bmatrix} -3 & -5 \\ 2 & 3 \end{bmatrix}$

B)  $A^{-1} = \begin{bmatrix} 8 & 5 \\ 6 & 4 \end{bmatrix}$

C)  $A^{-1} = \begin{bmatrix} 2 & -\frac{5}{2} \\ -3 & 4 \end{bmatrix}$

D) Singular

2)  $A = \begin{bmatrix} -1 & -1 & -3 \\ 3 & 6 & 4 \\ 2 & 1 & 8 \end{bmatrix}$

A)  $A^{-1} = \begin{bmatrix} -44 & -5 & -14 \\ 16 & 2 & 5 \\ 9 & 1 & 3 \end{bmatrix}$

B)  $A^{-1} = \begin{bmatrix} -1 & -1 & -3 \\ 3 & 6 & 4 \\ 2 & 1 & 8 \end{bmatrix}$

C)  $A^{-1} = \begin{bmatrix} -34 & 29 & 9 \\ 7 & -6 & -2 \\ -12 & 10 & 3 \end{bmatrix}$

D) Singular

**Question 6: Multiply Matrices.**

Find  $AB$ , if possible.

1)  $A = \begin{bmatrix} 3 & 4 \\ -7 & 1 \end{bmatrix} \quad B = \begin{bmatrix} 5 & 2 & -8 \\ -6 & 0 & 9 \end{bmatrix}$

A)  $AB = \begin{bmatrix} -9 & 6 & 12 \\ -41 & -14 & 65 \end{bmatrix}$

B)  $AB = \begin{bmatrix} 18 \\ -11 \end{bmatrix}$

C)  $AB = \begin{bmatrix} 0 & 12 & -10 \\ -6 & -3 & 17 \\ -4 & 20 & -7 \end{bmatrix}$

D) Not possible

2)  $A = \begin{bmatrix} 3 & -5 \end{bmatrix} \quad B = \begin{bmatrix} 4 & 0 & -2 \\ 1 & -3 & 2 \end{bmatrix}$

A)  $AB = \begin{bmatrix} -9 & 6 & 12 \\ -41 & -14 & 65 \end{bmatrix}$

B)  $AB = \begin{bmatrix} 7 & 15 & -16 \end{bmatrix}$

C)  $AB = \begin{bmatrix} 0 & 12 & -10 \\ -6 & -3 & 17 \\ -4 & 20 & -7 \end{bmatrix}$

D) Not possible



**Question 7: Use linear programming to solve applications.**

Find the maximum and minimum values of the objective function  $f(x, y)$  and for what values of  $x$  and  $y$  they occur, subject to the given constraints.

1)  $f(x, y) = 3x + y$

$$y \leq 2x + 1$$

$$x + 2y \leq 12$$

$$1 \leq y \leq 3$$

A) Max:  $f(10, 1) = 31$ ; Min:  $f(0, 1) = 1$

B) Max:  $f(4, 8) = 28$ ; Min:  $f(4, -1) = -8$

C) Max:  $f(5, 0) = 15$ ; Min:  $f(0, 1) = -5$

D) Max:  $f(2, -3) = 5$ ; Min:  $f(-2, 4) = -6$

2)  $f(x, y) = x - 4y$

$$x \geq 2, \quad y \geq 1$$

$$x - 2y \geq -4$$

$$2x - y \leq 7$$

$$x + y \leq 8$$

A) Max:  $f(2, -3) = 5$ ; Min:  $f(-2, 4) = -6$

B) Max:  $f(4, 1) = 0$ ; Min:  $f(4, 4) = -12$

C) Max:  $f(3, -2) = 5$ ; Min:  $f(-1, 2) = -3$

D) Max:  $f(5, 2) = 11$ ; Min:  $f(1, 4) = -5$



**Question 8:** Write equations of parabolas in standard form.

Write each equation of parabola in standard form.

1)  $y = 2x^2 - 24x + 40$

A)  $2(x - 6)^2 - 32$

B)  $-3(y + 2)^2 + 30$

C)  $3(x - 1)^2 - 7$

D)  $(y - 4)^2 - 27$

2)  $x + 3y^2 + 12y = 18$

A)  $(x - 6)^2 - 32$

B)  $-3(y + 2)^2 + 30$

C)  $3(x - 1)^2 - 7$

D)  $(y - 4)^2 - 27$

**Question 9: Write equations of circles.**

- 1) Suppose an unobstructed radio station broadcast could travel 120 kilometers. Assume the station is centered at the origin.

Write an equation to represent the boundary of the broadcast area with the origin as the center.

A)  $x^2 + y^2 = 14,400$

B)  $x^2 + y^2 = 29,000$

C)  $x^2 + y^2 = 40,000$

D)  $x^2 + y^2 = 841,000,000$

- 2) A stadium is located about 35 kilometers west and 40 kilometers north of a city. Suppose an earthquake occurs with its epicenter about 55 kilometers from the stadium. Assume that the origin of a coordinate plane is located at the center of the city. Write an equation for the set of points that could be the epicenter of the earthquake.

A)  $(x + 35)^2 + (y - 40)^2 = 3025$

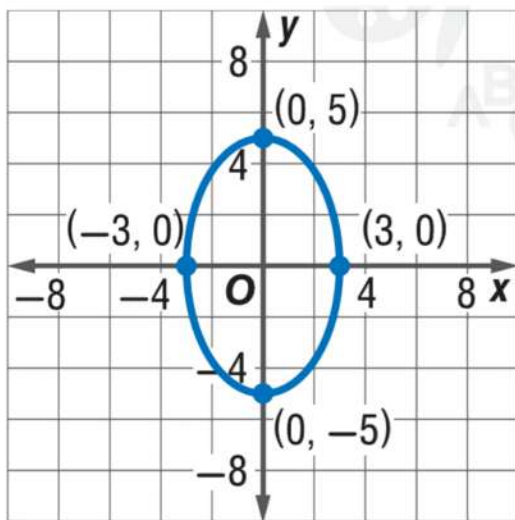
B)  $(x - 35)^2 + (y + 40)^2 = 55$

C)  $(x + 40)^2 + (y - 35)^2 = 3025$

D)  $(x - 35)^2 + (y + 40)^2 = 3025$

**Question 10: Graph ellipses.**

1) Write the equation for the ellipse.



A)  $\frac{y^2}{25} - \frac{x^2}{9} = 1$

B)  $\frac{y^2}{25} + \frac{x^2}{9} = 1$

C)  $\frac{y^2}{9} + \frac{x^2}{25} = 1$

D)  $\frac{y^2}{25} + \frac{x^2}{14} = 1$

2) Write an equation for an ellipse that satisfied each set of the following conditions.

Vertices at  $(-2, 5)$  and  $(14, 5)$ , co-vertices at  $(6, 1)$  and  $(6, 9)$ .

A)  $\frac{(x+6)^2}{64} + \frac{(y+5)^2}{16} = 1$

B)  $\frac{(x-6)^2}{16} + \frac{(y-5)^2}{64} = 1$

C)  $\frac{(x-6)^2}{64} + \frac{(y-5)^2}{16} = 1$

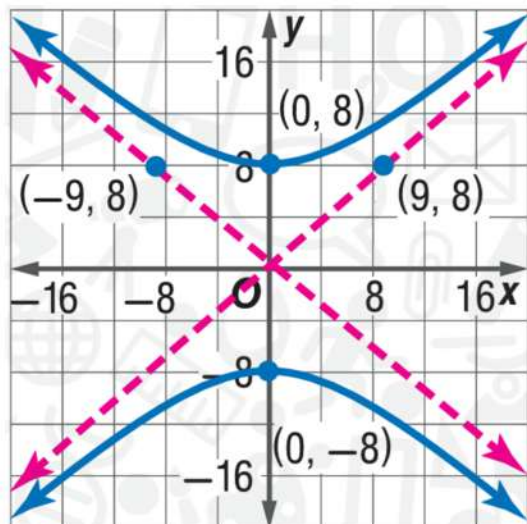
D)  $\frac{(x+6)^2}{16} + \frac{(y+5)^2}{64} = 1$





**Question 11: Write equations of hyperbola.**

1) Write the equation for the hyperbola.



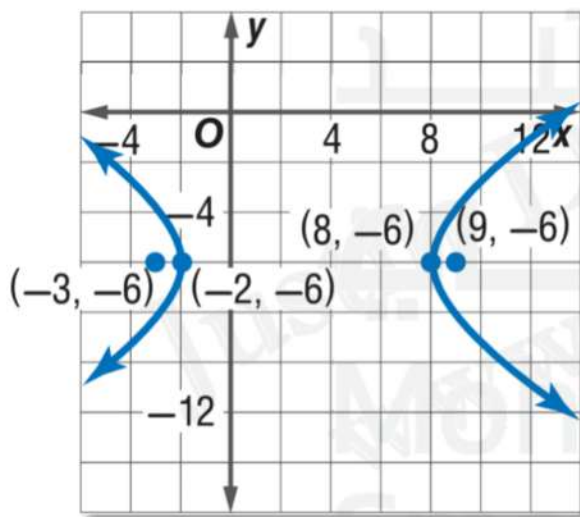
A)  $\frac{y^2}{64} - \frac{x^2}{81} = 1$

B)  $\frac{y^2}{64} + \frac{x^2}{81} = 1$

C)  $\frac{y^2}{81} - \frac{x^2}{64} = 1$

D)  $\frac{y^2}{81} + \frac{x^2}{64} = 1$

2) Write the equation for the hyperbola.



A)  $\frac{(x-3)^2}{25} - \frac{(y+6)^2}{11} = 1$

B)  $\frac{(x-3)^2}{25} - \frac{(y+6)^2}{11} = 1$

C)  $\frac{(x-3)^2}{25} - \frac{(y+6)^2}{11} = 1$

D)  $\frac{(x-3)^2}{25} - \frac{(y+6)^2}{11} = 1$





**Question 12:** Solve vector problems and resolve vectors into their rectangular components.

1) An airplane is flying with an airspeed of 310 knots on a heading of  $050^\circ$ . If a 78-knot wind is blowing from a true heading of  $125^\circ$ , determine the speed and direction of the plane relative to the ground.

A) 299.4 knots at about  $035^\circ$

B) 299.4 knots at about  $035^\circ$

C) 299.4 knots at about  $035^\circ$

D) 299.4 knots at about  $035^\circ$

2) A runner's resultant velocity is 8 miles per hour due west running with a wind of 3 miles per hour  $N28^\circ W$ . What is the runner's speed, to the nearest mile per hour, without the effect of the wind?

A) 7.1 miles per hour

B) 11.0 miles per hour

C) 5.5 miles per hour

D) 9.8 miles per hour





**Question 13:** Represent and operate with vectors in the coordinate plane.

Use the dot product to find the magnitude of the given vector.

1)  $p = \langle -9, -4 \rangle$

- A) 7.3
- B) 28.0
- C) 13.4
- D) 9.8

2)  $p = \langle -7, -2 \rangle$

- A)  $\sqrt{97}$
- B)  $6\sqrt{5}$
- C)  $\sqrt{53}$
- D)  $\sqrt{785}$



**Question 14:** Write a vector as a linear combination of unit vectors.

Find the projection of  $u$  onto  $v$ . Then write  $u$  as the sum of two orthogonal vectors, one of which is the projection of  $u$  onto  $v$ .

1)  $u = 3i + 6j, v = -5i + 2j$

A)  $\left\langle \frac{15}{29}, -\frac{6}{29} \right\rangle + \left\langle \frac{72}{29}, \frac{180}{29} \right\rangle$

B)  $\left\langle \frac{9}{13}, \frac{6}{13} \right\rangle + \left\langle -\frac{74}{13}, \frac{111}{13} \right\rangle$

C)  $\left\langle \frac{93}{13}, -\frac{62}{13} \right\rangle + \left\langle -\frac{28}{13}, -\frac{42}{13} \right\rangle$

D)  $\left\langle \frac{3}{10}, -\frac{9}{10} \right\rangle + \left\langle \frac{57}{10}, \frac{19}{10} \right\rangle$

2)  $u = 6i + j, v = -3i + 9j$

A)  $\left\langle \frac{15}{29}, -\frac{6}{29} \right\rangle + \left\langle \frac{72}{29}, \frac{180}{29} \right\rangle$

B)  $\left\langle \frac{9}{13}, \frac{6}{13} \right\rangle + \left\langle -\frac{74}{13}, \frac{111}{13} \right\rangle$

C)  $\left\langle \frac{93}{13}, -\frac{62}{13} \right\rangle + \left\langle -\frac{28}{13}, -\frac{42}{13} \right\rangle$

D)  $\left\langle \frac{3}{10}, -\frac{9}{10} \right\rangle + \left\langle \frac{57}{10}, \frac{19}{10} \right\rangle$



**Question 15:** Express vectors algebraically and operate with vectors in space.

1) Find  $-8x - 2y + 5z$  following for:

$$x = -9i + 4j + 3k, y = 6i - 2j - 7k, \text{ and } z = -2i + 2j + 4k.$$

A)  $-13i + 2j + 21k$

B)  $-18i - 6j + 6k$

C)  $50i - 18j + 10k$

D)  $-22i + 14j - k$

2) Find  $6b + 4c - 4a$  following for:

$$a = \langle -5, -4, 3 \rangle, b = \langle 6, -2, -7 \rangle \text{ and } z = \langle -2, 2, 4 \rangle.$$

A)  $\langle 48, 12, -38 \rangle$

B)  $\langle -68, -24, 55 \rangle$

C)  $\langle 22, 36, 3 \rangle$

D)  $\langle -27, 16, -21 \rangle$