

Write your SID here →

--	--	--	--	--	--	--	--	--

The University of Sydney
**School of Mathematics
& Statistics**
MATH1902 Practice for Quiz 2.

Family Name :
Other Names :
Day/time/room :
Signature :

The real quiz (15 questions) lasts 40 minutes and tests material covered in Exercises of week 7 through 10 (chapters 5 through 9)

These practice questions should take about 20 to 30 minutes and are similar to the first eight questions of the real quiz.

University approved Calculators are permitted but not needed.

Use a blue or black pen.

Answer Box for Question 1

Answer Box for Question 2

Answer Box for Question 3

Answer Box for Question 4

Answer Box for Question 5

Answer Box for Question 6

Answer Box for Question 7

Answer Box for Question 8

Questions 9, 10, 11, 12, 13, 14, 15 on the real quiz will be multiple choice.

PRACTICE QUESTIONS FOR MATH1902 QUIZ 2

When you have finished, write your answers into the answer boxes on the front. Take care when transcribing your answers. Use any blank spaces for rough working. Your answers should be exact, using surds if necessary. Do not make numerical approximations using your calculator.

1. Find the distance from the point $P(0, 1, -2)$ to the plane $3x - 6y + z = 2$.
2. Find the point on the plane $3x - 6y + z = 2$ that is closest to the point $P(0, 1, -2)$.
3. Find the intersection point, if it exists, of the lines

$$\mathbf{r} = 2\mathbf{i} + 3\mathbf{j} - \mathbf{k} + t(\mathbf{i} - \mathbf{j} + 4\mathbf{k}), \quad t \in \mathbb{R} \quad \text{and} \quad \frac{x}{2} = \frac{y+3}{2} = z-5.$$

4. Solve the system of linear equations

$$\begin{aligned} -3y - 4z &= 1 \\ x + 8y + 11z &= 2 \\ 2x + 14y + 19z &= 4 \end{aligned}$$

5. Find the value of λ such that the following system is inconsistent:

$$\begin{aligned} x & & - & 3z & = & -3 \\ -2x & - & \lambda y & + & z & = & 2 \\ x & + & 2y & + & \lambda z & = & 1 \end{aligned}$$

6. Solve the matrix equation $AB^{-1}XC - IAD = 0$ for the matrix X , assuming that A, B, C, D are invertible.
7. Find the inverse, if it exists, of the matrix

$$\begin{bmatrix} 1 & 2 & 3 \\ 1 & 2 & 4 \\ 0 & 4 & 4 \end{bmatrix}$$

8. Find the values of λ such that $\det \begin{bmatrix} 8 - \lambda & 6 \\ -10 & -9 - \lambda \end{bmatrix} = 0$.