



Name _____ Class _____ Date _____

AFTER THIS WORKSHEET YOU CAN

- ✓ Test vectors for linear independence.
- ✓ Find the dimension of a space.
- ✓ Recognise a basis.
- ✓ Understand the span of a set of vectors.



Section A · Concept Check

• BEGINNER

$4 \times 1 = 4$

- 1 Is $\{(1,3),(2,6)\}$ linearly independent?
☐ A. No ☐ B. Yes ☐ C. Only partly
☐ D. Cannot tell
- 2 Is $\{(1,0),(1,1)\}$ linearly independent?
☐ A. Yes ☐ B. No ☐ C. Only partly
☐ D. Cannot tell
- 3 The dimension of a space with basis $\{(1,0,0),(0,1,0)\}$ is:
☐ A. 2 ☐ B. 3 ☐ C. 1 ☐ D. 0
- 4 Does the span of $\{(1,0),(0,1)\}$ cover all of 2D space?
☐ A. Yes ☐ B. No ☐ C. Only a line
☐ D. Cannot tell



Section B · Problem Solving

• INTERMEDIATE

$2 + 3 \times 3 = 11$

- 5 Vectors that are not scalar multiples of each other are linearly _____.
- 6 $\{(1,3),(2,6)\}$ is linearly _____ (since $(2,6) = 2(1,3)$).
- 7 Is $\{(1,3),(2,6)\}$ linearly independent?

- 8 Is $\{(1,0),(1,1)\}$ linearly independent?

- 9 What is the dimension of a vector space with basis $\{(1,0,0),(0,1,0)\}$?



Section C · Challenge

• CHALLENGE

5

- 10 Does the span of $\{(1,0),(0,1)\}$ cover all of 2D space?

Reflection — the most useful thing I learned: _____

A ___/4 B ___/11 C ___/5 Total ___/20

Teacher's Signature _____

Parent's Signature _____

ANSWER KEY — FOLD OR CUT BEFORE HANDING OUT

1-A 2-A 3-A 4-A | 5 independent 6 dependent 7 = No, since $(2,6) = 2(1,3)$ 8 = Yes,
 neither is a scalar multiple of the other 9 = 2 | 10 = Yes