

# BHASVIC MaTHS

## A2 Doubles assignment Answers *summer 2*

### Section: *Mech and FP1*

#### Past

1.  $\ln 6$

2.  $\frac{\pi}{9}$

3. 6

4. a)  $0, \frac{2\pi}{3}, \pi, \frac{4\pi}{3}, 2\pi$  b) 14.5, 165.5, 90, 270

5. a) 7.5, 45, 97.5 b) 17.5, 107.5, 145

#### Present

6.

a)  $r = \begin{pmatrix} 4 \\ -1 \end{pmatrix} + \lambda \begin{pmatrix} 1 \\ 4 \end{pmatrix}$

e)  $r = \begin{pmatrix} 4 \\ 1 \end{pmatrix} + \lambda \begin{pmatrix} 2 \\ -3 \end{pmatrix}$

b)  $r = \begin{pmatrix} 1 \\ 0 \\ 5 \end{pmatrix} + \lambda \begin{pmatrix} 1 \\ 3 \\ -3 \end{pmatrix}$

f)  $r = \begin{pmatrix} -1 \\ 1 \\ 5 \end{pmatrix} + \lambda \begin{pmatrix} 3 \\ -2 \\ 2 \end{pmatrix}$

c)  $r = \begin{pmatrix} 4 \\ 0 \end{pmatrix} + \lambda \begin{pmatrix} 2 \\ 3 \end{pmatrix}$

g)  $r = \begin{pmatrix} 0 \\ 2 \end{pmatrix} + \lambda \begin{pmatrix} 1 \\ -3 \end{pmatrix}$

d)  $r = \begin{pmatrix} 0 \\ 2 \\ 3 \end{pmatrix} + \lambda \begin{pmatrix} 1 \\ 0 \\ -3 \end{pmatrix}$

h)  $r = \begin{pmatrix} 4 \\ -3 \\ 0 \end{pmatrix} + \lambda \begin{pmatrix} 2 \\ 3 \\ -1 \end{pmatrix}$

7.

a)  $r = \begin{pmatrix} 4 \\ 1 \end{pmatrix} + \lambda \begin{pmatrix} -3 \\ 1 \end{pmatrix}$

c)  $r = \begin{pmatrix} 2 \\ 7 \end{pmatrix} + \lambda \begin{pmatrix} 2 \\ -9 \end{pmatrix}$

b)  $r = \begin{pmatrix} -5 \\ -2 \\ 3 \end{pmatrix} + \lambda \begin{pmatrix} 9 \\ 0 \\ 0 \end{pmatrix}$

d)  $r = \begin{pmatrix} 1 \\ 1 \\ 3 \end{pmatrix} + \lambda \begin{pmatrix} 9 \\ -6 \\ -3 \end{pmatrix}$

8.

a)  $4x + 7y = 5$

d)  $3x - 2y + 13 = 0$

b)  $\frac{x-4}{2} = \frac{y+1}{-1} = \frac{z-5}{7}$

c)  $x = -1, \frac{y-5}{-2} = \frac{z}{2}$

e)  $\frac{x-1}{-1} = \frac{y-7}{1} = \frac{z-2}{2}$

f)  $\frac{x-3}{7} = y, z = 6$

9.

a)  $r = \begin{pmatrix} 0 \\ 2 \end{pmatrix} + \lambda \begin{pmatrix} 5 \\ 3 \end{pmatrix}$

b)  $r = \begin{pmatrix} 0 \\ -\frac{17}{5} \end{pmatrix} + \lambda \begin{pmatrix} 5 \\ 3 \end{pmatrix}$

c)  $r = \begin{pmatrix} 0 \\ -1 \end{pmatrix} + \lambda \begin{pmatrix} 3 \\ -4 \end{pmatrix}$

d)  $r = \begin{pmatrix} -2 \\ 0 \end{pmatrix} + \lambda \begin{pmatrix} 3 \\ -2 \end{pmatrix}$

10.

a)  $r = \begin{pmatrix} 2 \\ 2 \\ -1 \end{pmatrix} + \lambda \begin{pmatrix} 5 \\ 3 \\ 7 \end{pmatrix}$

b)  $r = \begin{pmatrix} -1 \\ 0 \\ 1 \end{pmatrix} + \lambda \begin{pmatrix} 3 \\ -7 \\ -5 \end{pmatrix}$

c)  $r = \begin{pmatrix} 11 \\ -1 \\ -2 \end{pmatrix} + \lambda \begin{pmatrix} 3 \\ 6 \\ 0 \end{pmatrix}$

d)  $r = \begin{pmatrix} -1 \\ 6 \\ 5 \end{pmatrix} + \lambda \begin{pmatrix} 4 \\ -1 \\ 3 \end{pmatrix}$

e)  $r = \begin{pmatrix} 3 \\ -1 \\ 0 \end{pmatrix} + \lambda \begin{pmatrix} 2 \\ 4 \\ 5 \end{pmatrix}$

f)  $r = \begin{pmatrix} -1 \\ 1 \\ 3 \end{pmatrix} + \lambda \begin{pmatrix} 5 \\ 0 \\ -2 \end{pmatrix}$

11. a) (10,-7,-2) b) (4.5, 0, 0) c)(3,2,-5) d) no intersection

12. a) yes b) yes c) yes d) no

13. a)  $r = \begin{pmatrix} 3 \\ -1 \\ 4 \end{pmatrix} + \lambda \begin{pmatrix} 5 \\ -1 \\ 2 \end{pmatrix}$ , b) proof, c)  $2\sqrt{30}$

14. a) neither, b) parallel

15.

16.  $a = -4, b = 2$  i)  $\begin{pmatrix} -2 \\ 1 \\ -1 \end{pmatrix}, \begin{pmatrix} 2 \\ -2 \\ -6 \end{pmatrix}, \begin{pmatrix} 4 \\ -3 \\ -5 \end{pmatrix}$  ii) Proof

17.  $\frac{3}{4}v + \frac{1}{4}u, \frac{1}{4}u - \frac{1}{4}v$

18. a) 1.29

19.  $a = \frac{1}{2}, b = -\frac{5}{2}$ , b)-2, -6.5, -139.8125 c)  $c = 2, d = 5$  d) 1.9129, 2.06658, 2.090292

20. a) (-3, 0), (5, 8) b) (-1, -1) c)  $y = \frac{1}{4}x^2 + \frac{1}{2}x - \frac{3}{4}$

21 b) 3

