

Aditya Sivakumar Math 251 Section 24

Chapter 12.1 & 12.2 Homework

12.1: 5, 7, 9, 11, 15, 21, 41, 47

12.2: 11, 13, 19, 25, 27, 31, 49, 51

12.1

5. $\langle \sqrt{2}|v|, \sqrt{2}|w| \rangle$

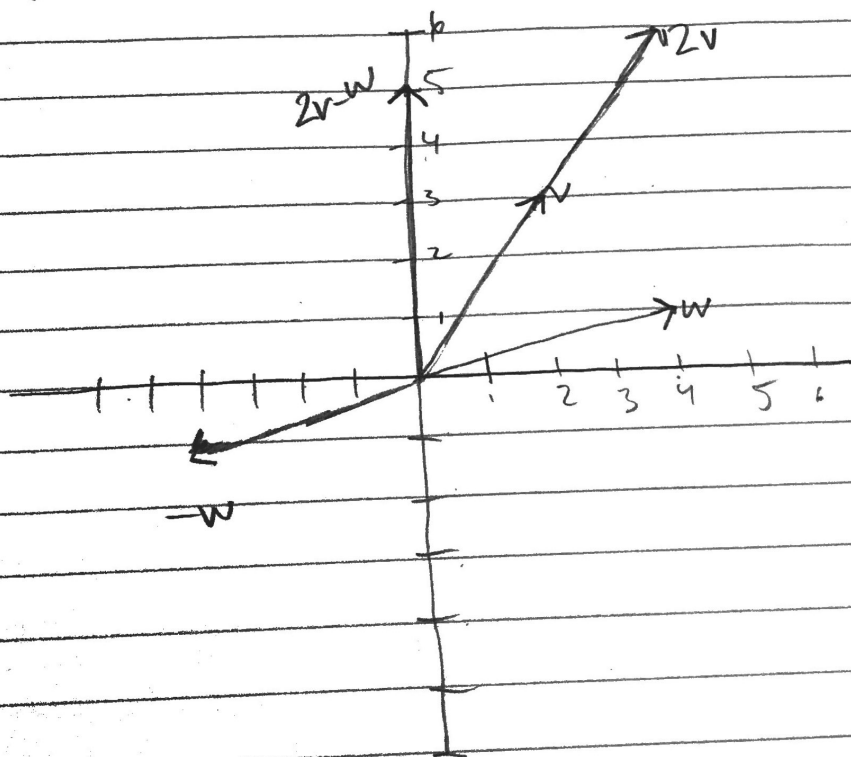
7. $\langle .940|w|, -.342|w| \rangle$

9. $\langle -1, 5 \rangle$

11. $\langle -2, -9 \rangle$

15 $\langle 30, 10 \rangle$

21.



$$41. \frac{v}{|v|} = \frac{\langle 3, 4 \rangle}{\sqrt{25}} = \langle \frac{3}{5}, \frac{4}{5} \rangle$$

$$47. v = \langle \cos \frac{4\pi}{7}, \sin \frac{4\pi}{7} \rangle$$
$$v = \langle -.223, .975 \rangle$$

12.2

11. $R = (1, 4, 3)$ $P = ?$

$$w = \vec{PR} = \langle 3, -2, 3 \rangle$$

$$(1-x, 4-y, 3-z) = \langle 3, -2, 3 \rangle$$

$$\boxed{P = (-2, 6, 0)}$$

13. a. Parallel, same direction

b. Not Parallel

c. Parallel, opposite direction

d. Not Parallel

19. $-2\langle 8, 11, 3 \rangle + 4\langle 2, 1, 1 \rangle =$

$$\langle -16, -22, -6 \rangle + \langle 8, 4, 4 \rangle =$$

$$\boxed{\langle -8, -18, -2 \rangle}$$

25. Not parallel

27. Not Parallel

31. $\frac{-v}{|-v|} = \frac{\langle 4, -4, -2 \rangle}{\sqrt{36}} = \boxed{\langle \frac{2}{3}, -\frac{2}{3}, -\frac{1}{3} \rangle}$

49. $r_1(t) = \langle 5, 5, 2 \rangle + t\langle 0, -2, 1 \rangle$

$$r_2(t) = \langle 5, 5, 2 \rangle + t\langle 0, -4, 2 \rangle$$

$$51. \quad r_1(t) = \langle -1, 2, 2 \rangle + t \langle 4, -2, 1 \rangle$$

$$r_2(t) = \langle 0, 1, 1 \rangle + t \langle 2, 0, 1 \rangle$$

$$\langle 4t-1, 2-2t, t+2 \rangle$$

$$\langle 2t, 1, t+1 \rangle$$

$$t_1 = 1/2 \quad t_2 = 1/2 \quad t_3 = \text{No solution}$$

\therefore Lines don't intersect