No.

Date

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#ok to post

Section 12.1 Exercise

Q5. $u = (\cos 45° |u|, \sin 45° |u|)$

$= (\frac{\sqrt{2}}{2}|u|, \frac{\sqrt{2}}{2}|u|)$

Q7. $w = (\cos 20° |w|, -\sin 20° |w|)$

$= (0.94|w|, -0.342|w|)$

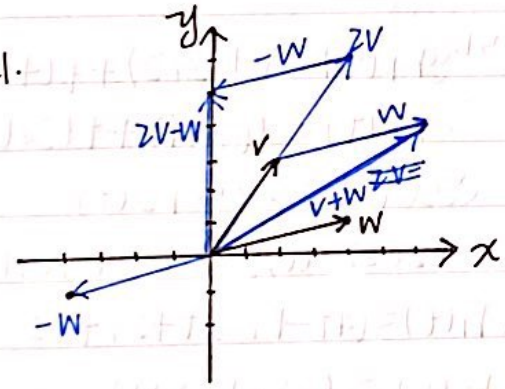
Q9. $\vec{PQ} = Q - P = (2,7) - (3,2) = (-1,5)$

Q11. $\vec{PQ} = Q - P = (1,-4) - (3,5) = (-2,-9)$

Q15. $5(6,2)$

$= (30,10)$

Q21.



Q41. $\because e_v = \frac{v}{|v|} = \frac{(3,4)}{\sqrt{9+16}} = \frac{(3,4)}{5} = (\frac{3}{5}, \frac{4}{5})$

$\therefore e_v = (\frac{3}{5}, \frac{4}{5})$

Q47. $e = (\cos \frac{4\pi}{7}, \sin \frac{4\pi}{7})$

$= (-0.223, 0.975)$

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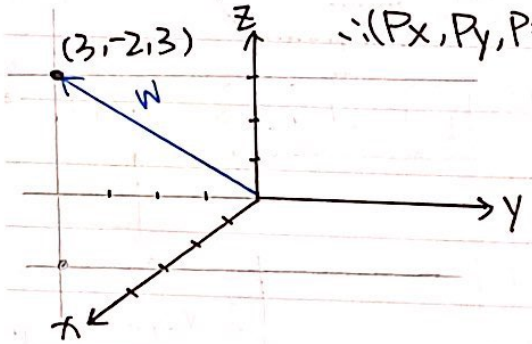
Section 12.2 Exercise

Q11. $W = \overrightarrow{PR}$

$\because W = (3,-2,3) = R - P = (1,4,3) - (P_x, P_y, P_z)$

$\therefore (P_x, P_y, P_z) = (-2,6,0)$



Q13. (a) and (c) are parallel to v.
and a is in the same direction.

Q19. $-2(8,11,3) + 4(2,1,1)$
$= (-16,-22,-6) + (8,4,4)$
$= (-8,-18,-2)$

Q25. $u = (4,2,-6)$, $v = (2,-1,3)$
$\therefore$ u and v are not parallel.

Q27. $u = (-3,1,4)$ $v = (6,-2,8)$
$\therefore$ u and v are not parallel.

Q31. the vector in the direction opposite is $-v = (4,-4,-2)$

$$u = \frac{-v}{|-v|} = \frac{(4,-4,-2)}{\sqrt{4^2+(-4)^2+(-2)^2}} = \frac{(4,-4,-2)}{6} = \left(\frac{2}{3}, \frac{-2}{3}, -\frac{1}{3}\right)$$

Q49. $P + tv$

$r_1(t) = (5,5,2) + (0,-2,1)t$

$r_2(t) = P + 2tv$
$= P + 2t(0,-2,1)$
$= P + 2t(0,-20,10)$

Q51. $\because r_1(t) = (-1,2,2) + t(4,-2,1)$
$r_2(t) = (0,1,1) + t(2,0,1)$
$\therefore$ set $t = s$ at $r_2(t)$
$r_2(s) = (0,1,1) + s(2,0,1)$
$\therefore r_1(t) = (4t-1, -2t+2, t+2)$
$r_2(s) = (2s, 1, s+1)$

$\because 4t - 1 = 2s$
$-2t + 2 = 1$ $\Big\}$ $\therefore t = \frac{1}{2}$, $s = \frac{1}{2}$
$t + 2 = s + 1$

but in equation 3,
$\frac{1}{2} + 2 \neq \frac{1}{2} + 1$
$\therefore$ they are not intersect.