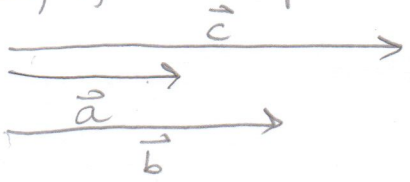
6.3

#7@ $\vec{a}, \vec{b}, \vec{c}$ are parallel



$\vec{a} = \frac{1}{2}\vec{c}$

$\vec{a} = \frac{2}{3}\vec{b}$

$m\vec{c} + n\vec{b} = \vec{0}$

$m(2\vec{a}) + n(\frac{3}{2}\vec{a}) = \vec{0}$

$2m\vec{a} = -\frac{3}{2}n\vec{a}$

$\therefore 2m = -\frac{3}{2}n$

$m = -\frac{3}{4}n$

only one equation but 2 unknowns

$\therefore$ many solutions possible.

- pick any n value solve for corresponding m value

There are many solutions as long as m and n are opposite sign and m is 3/4 of n

ex. if $m = -6$ and $n = 8$

check: then $m\vec{c} + n\vec{b} = -6\vec{c} + 8\vec{b}$

$= -6(2\vec{a}) + 8(\frac{3}{2}\vec{a})$

$= -12\vec{a} + 12\vec{a}$

$= \vec{0}$

(b) $d\vec{a} + e\vec{b} + f\vec{c} = \vec{0}$

$d\vec{a} + e(\frac{3}{2}\vec{a}) + f(2\vec{a}) = 0$

$\therefore d + \frac{3}{2}e + 2f = 0$

again since one equation but three unknowns many solutions possible

choose any value for 2 of the letters solve for the 3rd are - as one possible solution

ex. $e = 2$ $f = 3$ then $d + \frac{3}{2}(2) + 2(3) = 0$

$d = -9$

check: $d\vec{a} + e\vec{b} + f\vec{c} = \vec{0}$

$-9\vec{a} + 2(\frac{3}{2}\vec{a}) + 3(2\vec{a}) = \vec{0}$

$-9\vec{a} + 3\vec{a} + 6\vec{a} = \vec{0}$ ✓ works ☺