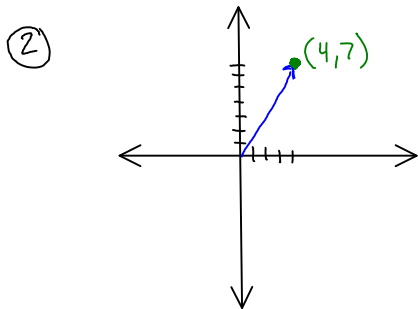


HW 12.2 1-25 all

Thursday, March 15, 2007
9:01 PM

Heather Graehl

- ① a scalar ② vector ③ vector ④ scalar

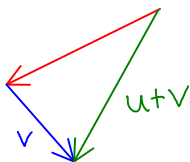


vector $\langle 4, 7 \rangle$ represents point $(4, 7)$ in respect to the origin.

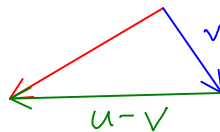
③ $\vec{AB} = \vec{DC}$, $\vec{DA} = \vec{CB}$, $\vec{DE} = \vec{EB}$, $\vec{EA} = \vec{CE}$

- ④ a) $\vec{PR}$ b) $\vec{RS}$ c) $\vec{QP}$ d) $\vec{RQ}$

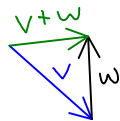
⑤ a) $u + v$



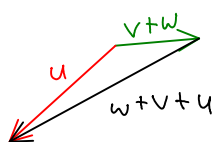
b) $u - v$



c) $v + w$



d) $w + v + u$



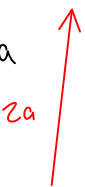
⑥ a) $a + b$

b) $a - b$

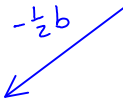
c) $2a$

d) $-\frac{1}{2}b$

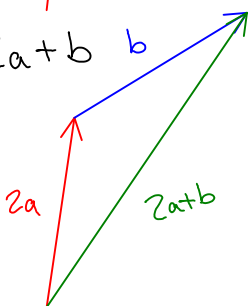
③ $2a$



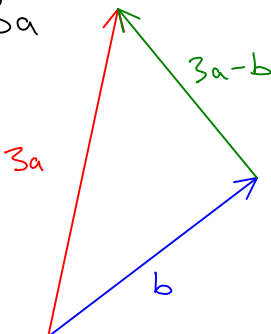
④ $-\frac{1}{2}b$

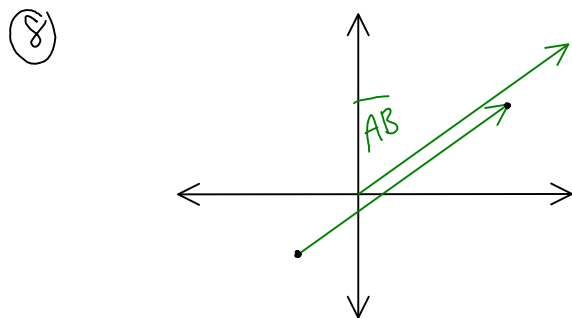
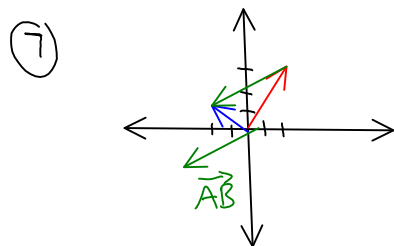


⑤ $2a+b$

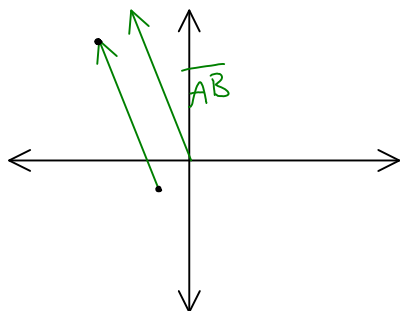


⑥ $b-3a$

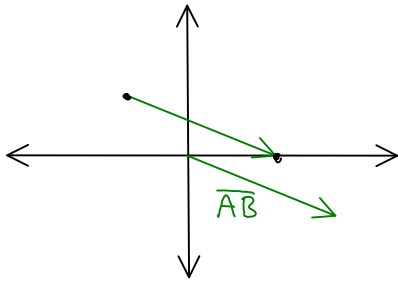




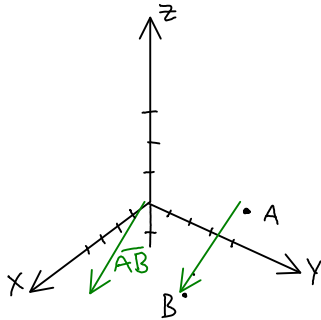
⑨ $A(-1, -1)$ $B(-3, 4)$



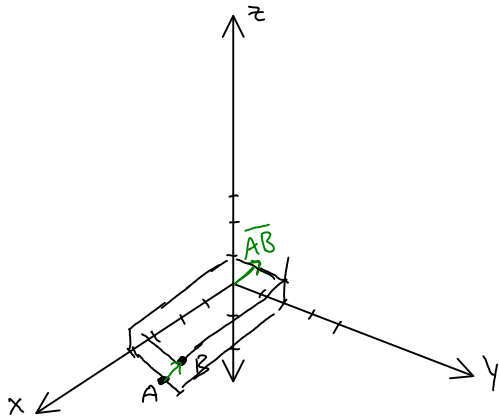
⑩ $A(-2, 2)$ $B(3, 0)$



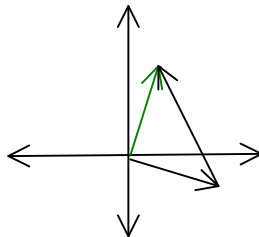
⑪ $A(0, 3, 1), B(2, 3, -1)$



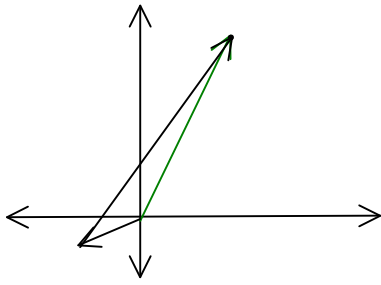
⑫ $A(4, 0, -2), B(4, 2, 1)$



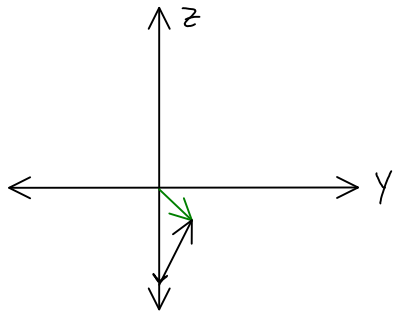
⑬ $\langle 3, -1 \rangle + \langle -2, 4 \rangle$
 $\langle 1, 3 \rangle$



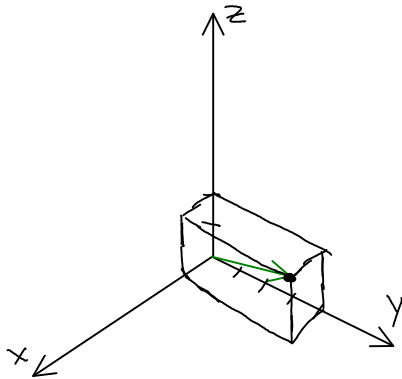
⑭ $\langle -2, -1 \rangle + \langle 5, 7 \rangle = \langle 3, 6 \rangle$



$$\textcircled{15} \quad \langle 0, 1, 2 \rangle + \langle 0, 0, -3 \rangle = \langle 0, 1, -1 \rangle$$



$$\textcircled{16} \quad \langle -1, 0, 2 \rangle + \langle 0, 4, 0 \rangle = \langle -1, 4, 2 \rangle$$



$$\textcircled{17} \quad a = \langle -4, 3 \rangle \quad b = \langle 6, 2 \rangle$$

$$|a| = \sqrt{16+9} = 5$$

$$a+b = \langle 2, 5 \rangle$$

$$a-b = \langle -10, 1 \rangle$$

$$2a = \langle -8, 6 \rangle$$

$$3a+4b = \langle -12, 9 \rangle + \langle 24, 8 \rangle = \langle 12, 17 \rangle$$

$$\textcircled{18} \quad a = 2i - 3j, \quad b = i + 5j$$

$$b = i + 5j$$

$$a = \langle 2, 0, 0 \rangle - \langle 0, 3, 0 \rangle = \langle 2, -3, 0 \rangle \quad \langle 1, 5, 0 \rangle$$

$$|a| = \sqrt{4+9} = \sqrt{13}$$

$$a+b = \langle 3, 2, 0 \rangle$$

$$a-b = \langle 1, -8, 0 \rangle$$

$$2a = \langle 4, -6, 0 \rangle$$

$$3a+4b = \langle 6, -9, 0 \rangle + \langle 4, 20, 0 \rangle = \langle 10, 11, 0 \rangle$$

$$\textcircled{19} \quad a = \langle 6, 2, 3 \rangle \quad b = \langle -1, 5, -2 \rangle$$

$$|a| = \sqrt{36+4+9} = 7$$

$$a+b = \langle 5, 7, 1 \rangle$$

$$a-b = \langle 7, -3, 5 \rangle$$

$$2a = \langle 12, 4, 6 \rangle$$

$$3a+4b = \langle 18, 6, 9 \rangle + \langle -4, 20, -8 \rangle = \langle 14, 26, 1 \rangle$$

$$\textcircled{20} \quad a = \langle -3, -4, -1 \rangle \quad b = \langle 6, 2, -3 \rangle$$

$$|a| = \sqrt{9+16+1} = \sqrt{26}$$

$$a+b = \langle 3, -2, -4 \rangle$$

$$a-b = \langle -9, -6, 2 \rangle$$

$$2a = \langle -6, -8, -2 \rangle$$

$$3a+4b = \langle -9, -12, -3 \rangle + \langle 24, 8, -12 \rangle = \langle 15, -4, -15 \rangle$$

$$\textcircled{21} \quad a = i - 2j + k \quad b = j + 2k$$

$$\langle 1, -2, 1 \rangle$$

$$\langle 0, 1, 2 \rangle$$

$$|a| = \sqrt{1+4+1} = \sqrt{6}$$

$$a+b = \langle 1, -1, 3 \rangle$$

$$a-b = \langle 1, -3, 1 \rangle$$

$$2a = \langle 2, -4, 2 \rangle$$

$$3a+4b = \langle 3, -6, 3 \rangle + \langle 0, 4, 8 \rangle = \langle 3, -2, 11 \rangle$$

$$\textcircled{22} \quad a = 3i - 2k \quad b = i - j + k$$

$$|a| = \sqrt{9+4} = \sqrt{13}$$

$$a+b = 4i - j - k$$

$$1 - 0 - 1 = 0$$

$$a-b = 2i - 3k + j$$

$$2a = 6i - 4k$$

$$3a+4b = 9i - 6k + 4i - 4j + 4k = 13i - 2k - 4j$$

$$\textcircled{23} \quad \langle 9, -5 \rangle \quad 9i - 5j$$

$$u = \frac{a}{|a|} \quad |a| = \sqrt{81 + 25} = \sqrt{106}$$

$$\left\langle \frac{9}{\sqrt{106}}, \frac{-5}{\sqrt{106}} \right\rangle$$

$$\textcircled{24} \quad 12i - 5j$$

$$|a| = \sqrt{144 + 25} = 13$$

$$\left\langle \frac{12i}{13}, \frac{-5j}{13} \right\rangle$$

$$\textcircled{25} \quad 8i - j + 4k$$

$$|a| = \sqrt{64 + 1 + 16} = 9$$

$$\left\langle \frac{8i}{9}, \frac{-j}{9}, \frac{4k}{9} \right\rangle$$