Ch1 HW1 (1360577)

Current Score: 0/31 **Due:** Thu Sep 2 2010 09:00 AM EDT

Question	1	2	3	4	5	6	7	8	9	10	11	12	Total
Points	0/0.5	0/0.5	0/1	0/1	0/2	0/2	0/4	0/12	0/0.5	0/5	0/1	0/1.5	0/31

Description
Vectors

Instructions
Reading: Matter & Interactions 3rd Edition Sec. 1.5 Because your final numerical answer must be within 1% of the correct answer, you need to keep more than 3 significant figures in your intermediate calculations.

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1. 0/0.5 points MI3 1.5.X.058. [1249692]

Which of the following are vectors? (Select all that apply.)

- ☐ < 0, 2.3, -1 >
- ☐ -3×10^{-6}
- ☐ 3.5
- ☐ 0
- ☐ $5\times$< 33, 1.04, -9.5 >
- ☐ < 0.7, 0.7, -0.7 >

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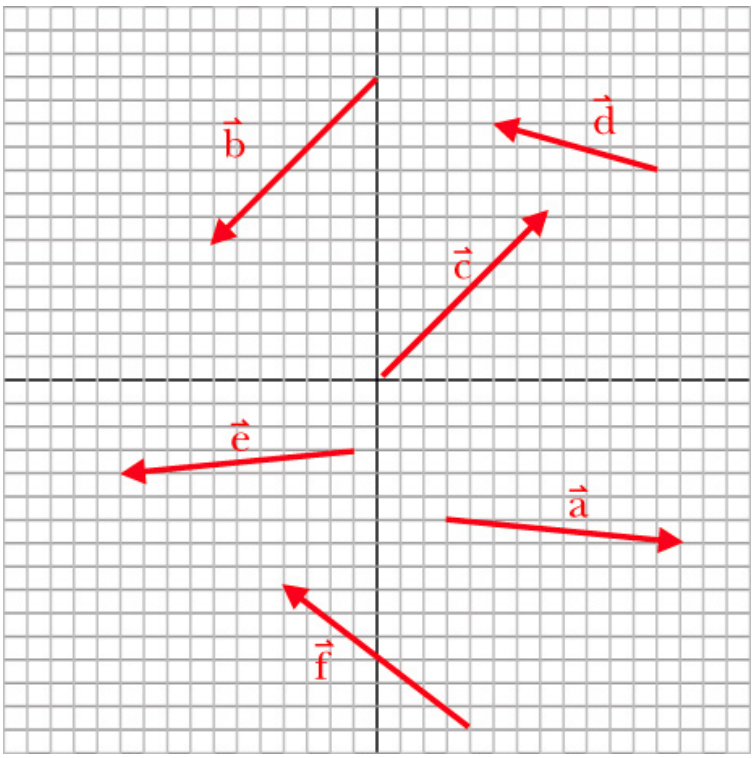
2. 0/0.5 points MI3 1.5.X.059. [1249686]

Which of the following are vectors? (Select all that apply.)

- ☐ $\vec{a}$
- ☐ $10\vec{r}$
- ☐ $\vec{r}/2$
- ☐ $|\vec{r}|$
- ☐ r
- ☐ < r_x, r_y, r_z >

3. 0/1 points [1250555]

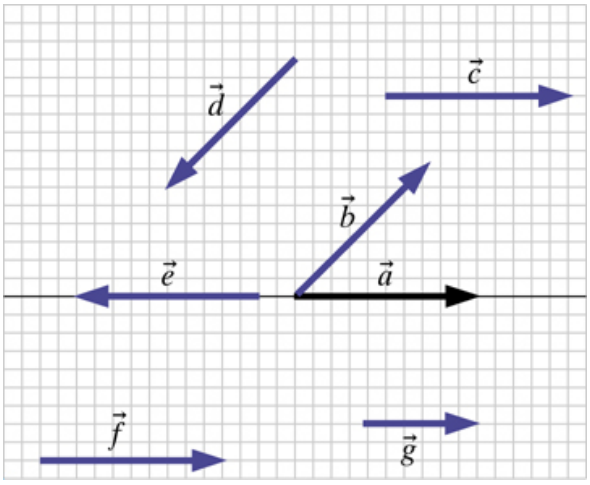


Which of the arrows shown in the diagram represents the vector < 10, -1, 0>?

---Select--- a

4. 0/1 points MI3 1.5.X.061. [1249708]

Read these questions carefully. They are not the same. (Select all that apply for each.)



(a) Which of the vectors in the diagram have magnitudes equal to the magnitude of $\vec{a}$?

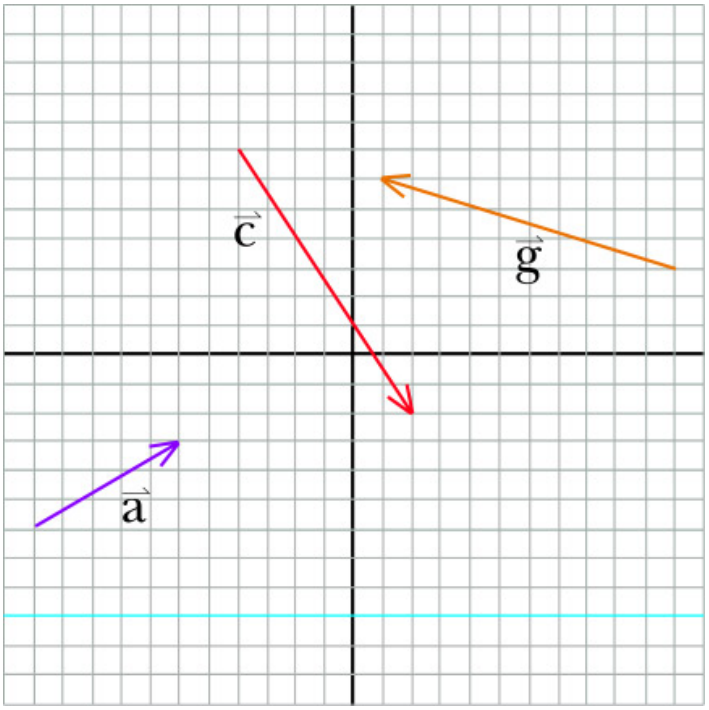
- [ ] $\vec{b}$
- [ ] $\vec{c}$
- [ ] $\vec{d}$
- [ ] $\vec{e}$
- [ ] $\vec{f}$
- [ ] $\vec{g}$

(b) Which of the vectors in the diagram are equal to $\vec{a}$?

- [ ] $\vec{b}$
- [ ] $\vec{c}$
- [ ] $\vec{d}$
- [ ] $\vec{e}$
- [ ] $\vec{f}$
- [ ] $\vec{g}$

5. 0/2 points MI3 1.5.X.062.alt01. [1249661]

In the diagram below three vectors are represented by arrows in the xy plane. Each division represents 1 meter.



(a) What are the components of the vector $\vec{c}$?

$\vec{c}$ = [ ] $< 6, -9, 0 >$ m

(b) What is the magnitude of $\vec{c}$?

$|\vec{c}|$ = [ ] 10.8 m

6. 0/2 points MI3 1.5.X.012. [1249717]

If $\vec{a}$ = < 3, -5, 5 >, then what is $7*\vec{a}$?

$7*\vec{a}$ = < [ ] 21 , [ ] -35 , [ ] 35 > How does the magnitude of $7*\vec{a}$ compare to the magnitude of $\vec{a}$?

- The magnitude of $7*\vec{a}$ is a factor of 7 greater than the magnitude of $\vec{a}$.
- The magnitude of $7*\vec{a}$ is a factor of 7 less than the magnitude of $\vec{a}$.
- The magnitude of $7*\vec{a}$ is the same as the magnitude of $\vec{a}$.
- The magnitude of $7*\vec{a}$ is zero.
- Not enough information is given.

7. 0/4 points mi3 1.5.x.084.nva [1541721]

A planet is located at < -9e10, 4e10, -3e10 > m. A star is located at < 2e10, -4e10, 1e10 > m.

(a) What is $\vec{r}_{sp}$, the vector from the star to the planet?

$\vec{r}_{sp}$ = $< -1.10e+11, 8.00e+10, -4.00e+10 >$ m

(b) What is the magnitude of $\vec{r}_{sp}$?

$|\vec{r}_{sp}|$ = 1.42e+11 m

(c) What is $\hat{r}$, the unit vector (vector with magnitude 1) in the direction of $\vec{r}_{sp}$?

$\hat{r}$ = $< -0.776, 0.564, -0.282 >$

8. 0/12 points MI3 1.5.X.072. [1250551]

Any vector can be written as a unit vector multiplied by the magnitude of the vector (a positive scalar). Write each of the following vectors as the magnitude of the vector times the appropriate unit vector:

< 0, 0, 6 > = (6) * < 0 , 0 , 1 >

< 0, -681, 0 > = (681) * < 0 , -1 , 0 >

< 0.00293, 0, -0.00293 > = (0.00415) * < 0.707 , 0 , -0.707 >

< 3e6, -7e6, 7e6 > = (1.03e+07) * < 0.29 , -0.677 , 0.677 >

9. 0/0.5 points MI3 1.5.X.063. [1249696]

If $\vec{p}$ = < -9, 5, 7 >, what is 5 + $\vec{p}$?

- < -4, 10, 12 >
- This is a meaningless expression, because a scalar cannot be added to a vector.
- < -45, 25, 35 >
- < -1.80, 1.00, 1.40 >
- < -14, 0, 2 >

10. 0/5 points MI3 1.5.X.021. [1249701]

$\vec{A} = \langle 700, 900, -700 \rangle$ and $\vec{B} = \langle -500, -300, 150 \rangle$.
Calculate the following:

(a) $\vec{A} + \vec{B}$

⟨ [ ] 200 , [ ] 600 , [ ] -550 ⟩

(b) $|\vec{A} + \vec{B}|$

[ ] 838

(c) $|\vec{A}|$

[ ] 1340

(d) $|\vec{B}|$

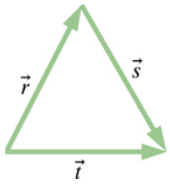
[ ] 602

(e) $|\vec{A}| + |\vec{B}|$

[ ] 1940

11. 0/1 points MI3 1.5.X.023. [1249715]

Which of the following statements about the three vectors shown are correct?



- ☐ $\vec{s} + \vec{t} = \vec{r}$
- ☐ $\vec{s} = \vec{t} - \vec{r}$
- ☐ $\vec{r} + \vec{s} = \vec{t}$
- ☐ $\vec{r} + \vec{t} = \vec{s}$
- ☐ $\vec{r} = \vec{t} - \vec{s}$

12. 0/1.5 points MI3 1.5.X.026. [1249703]

A unit vector lies in the *xy* plane, at an angle of 155 degrees from the +*x* axis, with a positive *y* component. What is the unit vector? (It helps to draw a diagram.)

⟨ [ ] -0.906 , [ ] 0.423 , [ ] 0 ⟩

Assignment Details