

**Q1:** Find the component form of each vector. USE PROPER NOTATION, round to 1 decimal place when necessary.

$$\|u\| = 20, \text{ angle} = 150^\circ$$

**Q2:** Determine the unit vector,  $u$ , in the direction of the given vector  $w$ .

$$w = \langle -6, -8 \rangle$$

$$u =$$

**Q3:** Find the direction angle of each vector. Round all answers to ONE decimal point as needed.

$$s = \langle 6, -2 \rangle$$

**Q4:** Find the direction angle of each vector. Round all answers to ONE decimal point as needed.

$$v = -3i - 7j$$

**Q5:** Find the component form of each vector. USE PROPER NOTATION, round to 1 decimal place when necessary.

$$\|s\| = 10, \text{ angle} = 315^\circ$$

**Q6:** Determine the component form and the magnitude

**Part A**

A vector begins at (1, 3) and ends at (5, 6). Determine the component form! Your answer will be an ordered pair with  $\langle \rangle$  instead of  $()$ , example  $\langle 2, 5 \rangle$

**Part B**

Find the magnitude, simplify as much as possible!

**Q7:** In the matrix below, find  $c_{32}$

$$C = \begin{bmatrix} -1 & 2 \\ -5 & 4 \\ 3 & 0 \\ 7 & -8 \end{bmatrix}$$

**Q8:** Solve the system of equations. Write your answer as a list of numbers separate by parentheses. (Hint: what number do we use as a placeholder when something is missing?)

$$x - 3z = -2$$

$$3x + y - 2z = 5$$

$$2x + 2y + z = 4$$

**Q9:** A boat is traveling at 45 knots bearing  $210^\circ$  against a current moving 7 mph at  $N75^\circ E$ .

**Part A**

Determine the actual speed of the boat in the current, round all answers to nearest whole number.

**Part B**

Determine the actual bearing (direction) of the boat.

**Q10:** A vector parallel to  $1i + 2j + 3k$  with the magnitude  $\sqrt{56}$  is

- A**  $-i - 2j - 3k$
  - B**  $2i + 4j + 6k$
  - C**  $4i + 2j + 6k$
  - D**  $4i + 8j + 12k$
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**Q11:** Which of the following is the correct pair of vector and parametric equations for the line containing the point P  $(4, 0, 2)$  and parallel to  $v = (1, -4, 2)$ ?

- A** *Parametric* :  $x = 4 + t, y = -4t, z = 2 + 2t$   
*Vector* :  $(x, y, z) = (4, 0, 2) + t(1, -4, 2)$
  - B** *Parametric* :  $x = 1 + 4t, y = -4, z = 2 + 2t$   
*Vector* :  $(x, y, z) = t(1, -4, 2)$
  - C** *Parametric* :  $x = t, y = -4t, z = 2t$   
*Vector* :  $(x, y, z) = t(1, -4, 2)$
  - D** *Parametric* :  $x = 1, y = -4, z = 2$   
*Vector* :  $(x, y, z) = (4, 0, 2) + t(1, -4, 2)$
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**Q12:** Which of the following is not a point on the plane with Cartesian equation  $3x + 2y - 2z - 4 = 0$

- A** P(2, 0, 1)
  - B** Q(2, 3, 4)
  - C** R(1, 1, 1)
  - D** S(0, 3, 1)
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