3-1

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Find the components of the vector P_1P_2

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(*a*) $P1(3, 5), \quad P2(2, 8)$
(*b*) $P1(5, -2, 1), \quad P2(2, 4, 2)$

Find an initial point P of a nonzero vector u = PQ with terminal point Q(3, 0, -5) and such that

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(*a*) u has the same direction as $v = (4, -2, -1)$.
(*b*) u is oppositely directed to $v = (4, -2, -1)$.

Let $\mathbf{u} = (-3, 2, 1, 0)$, $\mathbf{v} = (4, 7, -3, 2)$, and $\mathbf{w} = (5, -2, 8, 1)$. Find the components of

11 d)

$(6\mathbf{v} - \mathbf{w}) - (4\mathbf{u} + \mathbf{v})$

Which of the following vectors in $\boldsymbol{R}^6$, if any, are parallel to $u = (-2, 1, 0, 3, 5, 1)$?

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(*a*) $(4, 2, 0, 6, 10, 2)$
(*b*) $(4, -2, 0, -6, -10, -2)$
(*c*) $(0, 0, 0, 0, 0, 0)$

Let $\mathbf{u} = (1, -1, 3, 5)$ and $\mathbf{v} = (2, 1, 0, -3)$. Find scalars a and b so that a $\mathbf{u} + b\mathbf{v} = (1, -4, 9, 18)$.

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Find c_1 c_1 c_1

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$c_1(1, -1, 0) + c_2(3, 2, 1) + c_3(0, 1, 4) = (-1, 1, 19)$

Show that there do not exist scalars c_1, c_2, and c_3 such that $c_1(-2, 9, 6) + c_2(-3, 2, 1) + c_3(1, 7, 5) = (0, 5, 4)$

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