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Lista de Exercícios Sobre Vetores

13. Sejam $u = (4, -1)$, $v = (0,5)$ e $W = (-3, -3)$. Encontre as Componentes de:

(a) $u + w$

$R = (4, -1) + (-3, -3)$

$R = (1, -4)$

b) $v - 3u$

$R = (0,5) - 3(4, -1)$

$R = (0,5) - (12, -3)$

$R = (-12, 8)$

c) $2(u - 5w)$

$R = 2[(4, -1) - 5(-3, -3)]$

$R = 2[(4, -1) - (-15, -15)]$

$R = 2[(19, 14)]$

$R = (38, 28)$

d) $3v - 2(u + 2u)$

$R = 3(0,5) - 2[(4, -1) + 2(-3, -3)]$

$R = (0,15) - 2[(4, -1) + (-6, -6)]$

$R = (0,15) - 2(-2, -7)$

$R = (0,15) - (-4, -14)$

$R = (4, 29)$

e) $-3(W - 2u + v) = -3[(-3, -3) - 2(4, -1) + (0,5)]$

$R = -3[(-3, -3) - (8, -2) + (0,5)]$

$R = -3(-11, 4)$

$R = (33, -12)$

f) $(-2u - v) - 5(v + 3u)$

$[-2(4,-1) - (0,5)] - 5[(0,5) + 3(-3,-3)]$

$[(-8,2) - (0,5)] - 5[(0,5) + (-9,-9)]$

$(-8,-3) - 5(-9,-4)$

$(-8,-3) - (-45,-20)$

$(37,17)$

15) Sejam $u = (-3, 2, 1, 0)$, $v = (4, 7, -3, 2)$ e $w = (5, -2, 8, 1)$. Encontre as componentes de:

a) $v - w$

$(4, 7, -3, 2) - (5, -2, 8, 1)$

$R = (-1, 9, -11, 1)$

b) $2u + 7v$

$2(-3, 2, 1, 0) + 7(4, 7, -3, 2)$

$(-6, 4, 2, 0) + (28, 49, -21, 14)$

$(22, 53, -19, 14)$

e) $-u + (v - 4w)$

$-(-3, 2, 1, 0) + [(4, 7, -3, 2) - 4(5, -2, 8, 1)]$

$(3, -2, -1, 0) + [(4, 7, -3, 2) - (20, -8, 32, 4)]$

$(3, -2, -1, 0) + (-16, 15, -35, -2)$

$(-13, 13, -36, -2)$

d) $6(u - 3v)$

$6[(-3, 2, 1, 0) - 3(4, 7, -3, 2)]$

$6[(-3, 2, 1, 0) - (12, 21, -9, 6)] = 6(-15, -19, 10, -6)$

$(-90, -114, 60, -36)$

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e) $-v - w$

$-(4, 7, -3, 2) - (5, -2, 8, 1)$

$(-4, -7, 3, -2) + (-5, 2, -8, -1)$

$(-9, -5, -5, -3)$

f) $(6v - w) - (4u + v)$

$[6(4, 7, -3, 2) - (5, -2, 8, 1)] - [4(-3, 2, 1, 0) + (4, 7, -3, 2)]$

$[(24, 42, -18, 12) - (5, -2, 8, 1)] - [(-12, 8, 4, 0) + (4, 7, -3, 2)]$

$(19, 44, -26, 11) - (-8, 15, 1, 2)$

$(27, 29, -27, 9)$

17) Sejam $u = (5, -1, 0, 3, -3)$, $v = (-1, -1, 7, 2, 0)$ e $w = (-4, 2, -3, -5, 2)$. Encontre as componentes de:

a) $w - u$

$(-4, 2, -3, -5, 2) - (5, -1, 0, 3, -3)$

$(-9, 3, -3, -8, 5)$

b) $2v + 3u$

$(-2, -2, 14, 4, 0) + (15, -3, 0, 9, -9)$

$(13, -5, 14, 13, -9)$

c) $-w + 3(v - u)$

$(4, -2, 3, 5, -2) + 3[(-1, -1, 7, 2, 0) - (5, -1, 0, 3, -3)$

$(4, -2, 3, 5, -2) + 3(-6, 0, 7, -1, 3)$

$(4, -2, 3, 5, -2) + (-18, 0, 21, -3, 9)$

$(-14, -2, 24, 2, 7)$

d) $5(-v + 4u - w)$

$5[-(-1,-1,7,2,0) + 4(5,-1,0,3,-3) - (-4,2,-3,-5,2)]$

$5[(1,1,-7,-2,0) + (20,-4,0,12,-12) + (4,-2,3,5,-2)]$

$5[(21,-3,-7,10,-12) + (4,-2,3,5,-2)]$

$5(25,-5,-4,15,-14)$

$(125,-25,-20,75,-70)$

e) $-2(3w + v) + (2u + w)$

$-2[3(-4,2,-3,-5,2) + (-1,-1,7,2,0)] + [2u + w]$

$-2[(-12,6,-9,-15,6) + (-1,-1,7,2,0)] + [2u + w]$

$-2(-13,5,-2,-13,6) + [2(5,-1,0,3,-3) + (-4,2,-3,-5,2)]$

$(26,-10,4,26,-12) + [(10,-2,0,6,-6) + (-4,2,-3,-5,2)]$

$(26,-10,4,26,-12) + (6,0,-3,1,-4)$

$(32,-10,1,27,-16)$

f) $\frac{1}{2}(w - 5v + 2u) + v$

$\frac{1}{2}[(-4,2,-3,-5,2) - 5(-1,-1,7,2,0) + 2(5,-1,0,3,-3)] + v$

$\frac{1}{2}[(-4,2,-3,-5,2) - (-5,-5,35,10,0) + (10,-2,0,6,-6)] + v$

$\frac{1}{2}[(1,7,-38,-15,2) + (10,-2,0,6,-6)] + v$

$\frac{1}{2}(11,5,-38,-9,-4) + v$

$(\frac{11}{2}, \frac{5}{2}, -19, -\frac{9}{2}, -2) + (-1,-1,7,2,0)$

$(\frac{9}{2}, \frac{3}{2}, -12, -\frac{5}{2}, -2)$

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19. Sejam $u = (-3, 1, 2, 4, 4)$, $v = (4, 0, -8, 1, 2)$ e $w = (6, -1, -4, 3, -5)$. Encontre as componentes de

(a) $v - w$

$(4, 0, -8, 1, 2) - (6, -1, -4, 3, -5)$

$(-2, -1, -12, -2, 7)$

b) $6u + 2v$

$6(-3, 1, 2, 4, 4) + 2(4, 0, -8, 1, 2)$

$(-18, 6, 12, 24, 24) + (8, 0, -16, 2, 4)$

$(-10, 6, -4, 26, 28)$

C) $(2u - 7w) - (8v + w)$

$[2(-3, 1, 2, 4, 4) - 7(6, -1, -4, 3, -5)] - (8v + w)$

$[(-6, 2, 4, 8, 8) - (42, -7, -28, 21, -35)] - (8v + w)$

$[(-48, 9, 32, -13, 43)] - [8(4, 0, -8, 1, 2) + (-3, 1, 2, 4, 4)]$

$(-48, 9, 32, -13, 43) - [(32, 0, -64, 8, 16) + (-3, 1, 2, 4, 4)]$

$(-48, 9, 32, -13, 43) - (29, 1, -62, 12, 20)$

$(-77, 8, 94, -25, 23$