

$$a) 2u + 3v - 4w$$

$$\begin{aligned} & 2(2, 3, -1) + 3(0, -1, 2) - 4(1, 0, -2) \\ & (4, 6, -2) + (0, -3, 6) - (4, 0, -8) \\ & (0, 3, 12) \end{aligned}$$

$$b) |u + v|$$

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

$$\begin{aligned} |(2, 2, 1)| &= \sqrt{2^2 + 2^2 + 1^2} = \sqrt{9} \\ &= 3 \end{aligned}$$

$$c) |2v - w|$$

$$2(0, -1, 2) - (1, 0, -2)$$

$$(0, -2, 4) - (1, 0, -2) = (-1, -2, 6)$$

$$\sqrt{(-1)^2 + (-2)^2 + 6^2} = \sqrt{1 + 4 + 36} = \sqrt{41}$$