6)
$$V_1 = \{1, 2\}$$
 $V_2 = \{3, 4\}$

$$V_1 * V_2 = (1 \times 3) + (2 \times 4)$$

$$= 3 * 8$$

$$= 11$$

$$|V_1| = \sqrt{12 + 3} = \sqrt{5}$$

$$|V_3| = \sqrt{3^2 + 4^2} = \sqrt{35} = \sqrt{5}$$

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