$$||v|| = \sqrt{v \cdot v}$$

$$||v|| = \sqrt{v_1{}^2 + v_2{}^2 + v_3{}^2 + v_4{}^2}$$

$$||v|| = \sqrt{1^2 + 2^2 + 3^2 + 4^2}$$

$$||v|| = \sqrt{1 + 4 + 9 + 16}$$

$$||v|| = \sqrt{30}$$