

71 (a) $\|\mathbf{R}\| = \sqrt{1^2 + (-2)^2} = \sqrt{1+4} = \sqrt{5} \approx 2.2$, $\|\mathbf{A}\| = \sqrt{0.5^2 + 1^2} = \sqrt{0.25+1} = \sqrt{1.25} \approx 1.1$

About 2.2 inches of rain fell. The area of the opening of the rain guage was about 1.1 in^2 .

(b) $V = |\mathbf{R} \cdot \mathbf{A}| = |(1)(0.5) + (-2)(1)| = |-1.5| = 1.5$. The volume of rain collected was 1.5 in^3 .

(c) \mathbf{R} and \mathbf{A} should be parallel and point in opposite directions.