

Question 7

The number of viewers watching a viral video on a social media platform can be modeled by the function

$$V(t) = 1500 \cdot e^{0.7t}$$

where $V(t)$ is the number of viewers and t is the time in days since the video was posted.

- (a) How many people have viewed the video after 2 days?
- (b) After how many days will the video have 50,000 viewers?
- (c) What is the average rate of change of viewers between day 1 and day 3?

Round all answers to two decimal places.

Question 7 - Solution

Use the exact exponential model and keep full precision until the final rounding.

(a)

$$V(2) = 1500e^{1.4}$$

$$\boxed{6082.80 \text{ viewers}}$$

(b)

$$t = \ln(50000/1500)/0.7$$

$$\boxed{5.01 \text{ days}}$$

(c)

$$\frac{V(3) - V(1)}{3 - 1} = 750(e^{2.1} - e^{0.7})$$

$$\boxed{4614.31 \text{ viewers/day}}$$