

Kelompok 2

1. How many gallons of blood does it pump during a person's lifetime? (Estimate that the heart pumps 50 cm^3 of blood with each beat.). Use the information that an average middle-aged (40 year-old) adult at rest has a heart rate of roughly 75 beats per minute.
2. The fastest measured pitched baseball left the pitcher's hand at a speed of 45.0 m/s. If the pitcher was in contact with the ball over a distance of 1.50 m and produced constant acceleration, (a) what acceleration did he give the ball, and (b) how much time did it take him to pitch it?

3. A web page designer creates an animation in which a dot on a computer screen has position

$$\vec{r} = [4.4 \text{ cm} + (2.8 \text{ cm/s}^2)t^2]\hat{i} + (5.5 \text{ cm/s})t\hat{j}$$

- (a) Find the magnitude and direction of the dot's average velocity between $t = 0$ and $t = 2.0$ s.
- (b) Find the magnitude and direction of the instantaneous velocity at $t = 0$, $t = 1.0$ s, and $t = 2.0$ s.
- (c) Sketch the dot's trajectory from $t = 0$ to $t = 2.0$ s, and show the velocities calculated in part (b).