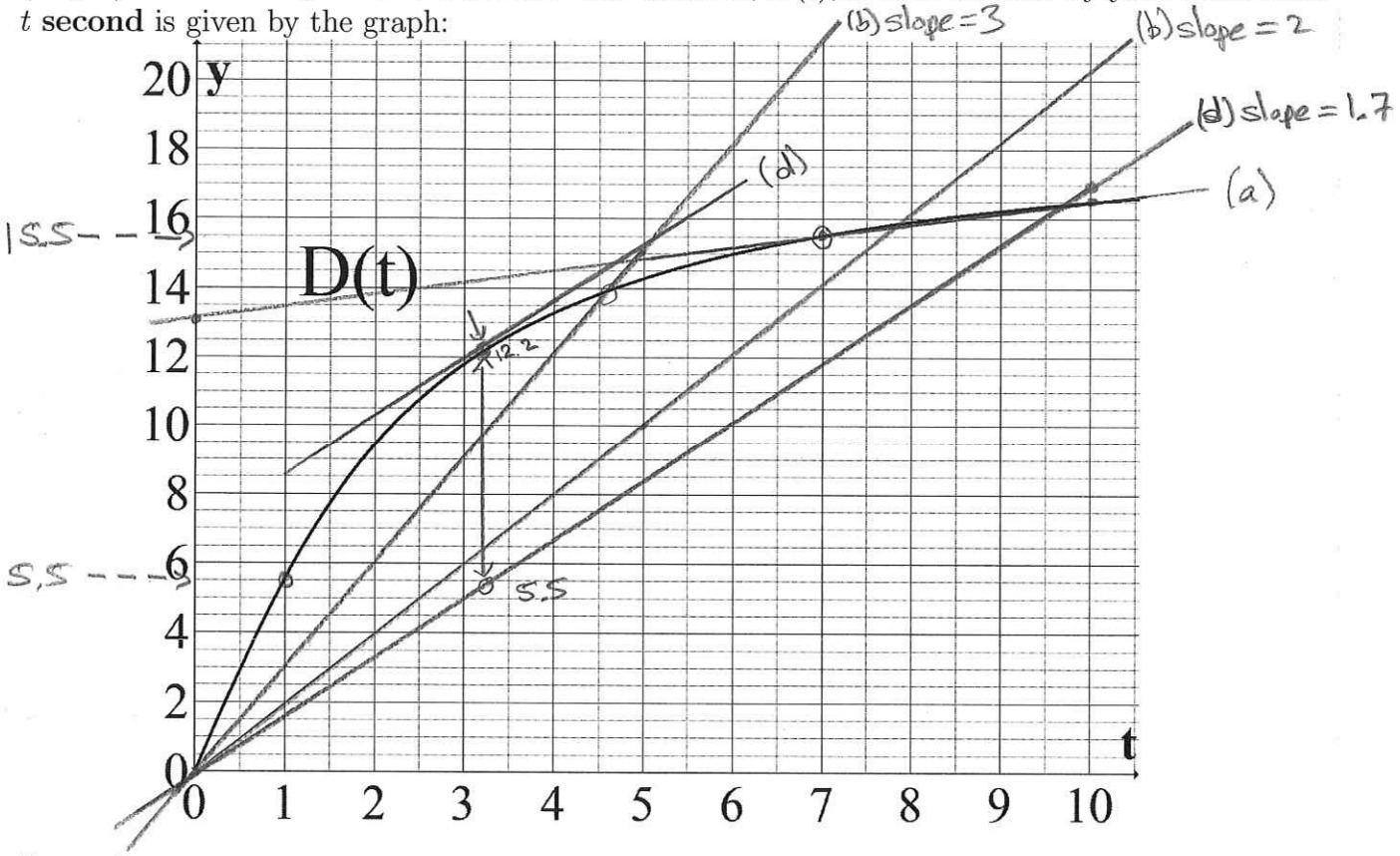
1. (13 pts) Your friend goes for a bike ride. The distance, $D(t)$, in **feet** traveled by your friend after t **second** is given by the graph:



For each part, clearly explain your work in a sentence and label your work in the graph.

3 (a) Find the average speed over the 3-second interval starting at $t = 7$ second. (Give the units)

SLOPE FROM 7 TO 10 $\approx \frac{15.5 - 13}{7 - 0} \approx 0.36$

RANGE: 0.28 to 0.42

Average Speed = 0.36 UNITS = ft/sec

3 (b) Find the largest interval when Average Trip Speed is between 2 feet/second and 3 feet/second.

$2 <$ DIAGONAL SLOPE < 3

DRAW REFERENCE LINES

ATS(4.6) ≈ 3 ATS(7.8) ≈ 2

RANGE: 4.4 to 4.8 RANGE: 7.6 to 8.0

$t =$ 4.6 to $t =$ 7.8 seconds

3 (c) Find the value of t at which $D(t) - D(1) = 10$.

$D(1) \approx 5.5$

WANT $D(t) \approx 15.5 \Rightarrow D(7) \approx 15.5$ SO

RANGE: 6.8 to 7.3

$t =$ 7 seconds

4 (d) You decide to go for a bike ride as well. You start at the same time and place, but you travel at a constant speed of 1.7 feet/second. Find the time when your friend is farthest ahead of you and estimate the distance between you and your friend at this time.

MATCH SLOPES

GAP SIZE $\approx 12.2 - 5.5 \approx 6.7$

RANGE: 2.8 to 3.6

$t =$ 3.2 seconds

Distance ahead = 6.7 feet

RANGE: 6.3 to 7.1