

Calculus 5.4 Part III Finding Displacement and Distance

Lesson 308 | Calculus AB | Displacement and distance

<https://www.youtube.com/watch?v=MNK4S4SRER8>

Original practice aligned to the saved video title.

Name: _____ Date: _____ Show your reasoning.

01

A particle has $v(t)=11(t-4)$ on $0 \leq t \leq 11$. Find displacement and total distance.

02

A particle has $v(t)=11(t-3)$ on $0 \leq t \leq 7$. Find displacement and total distance.

03

A particle has $v(t)=10(t-3)$ on $0 \leq t \leq 10$. Find displacement and total distance.

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04

A particle has $v(t)=3(t-12)$ on $0 \leq t \leq 15$. Find displacement and total distance.

05

A particle has $v(t)=2(t-14)$ on $0 \leq t \leq 20$. Find displacement and total distance.

06

A particle has $v(t)=3(t-4)$ on $0 \leq t \leq 11$. Find displacement and total distance.

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01

A particle has $v(t)=11(t-4)$ on $0 \leq t \leq 11$. Find displacement and total distance.

Velocity changes sign at $t=4$. Displacement = $11[t^2/2-4t]_0^{11}=363/2$. Distance adds the magnitudes of the two triangular areas: $715/2$.

02

A particle has $v(t)=11(t-3)$ on $0 \leq t \leq 7$. Find displacement and total distance.

Velocity changes sign at $t=3$. Displacement = $11[t^2/2-3t]_0^7=77/2$. Distance adds the magnitudes of the two triangular areas: $275/2$.

03

A particle has $v(t)=10(t-3)$ on $0 \leq t \leq 10$. Find displacement and total distance.

Velocity changes sign at $t=3$. Displacement = $10[t^2/2-3t]_0^{10}=200$. Distance adds the magnitudes of the two triangular areas: 290.

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04

A particle has $v(t)=3(t-12)$ on $0 \leq t \leq 15$. Find displacement and total distance.

Velocity changes sign at $t=12$. Displacement = $3[t^2/2-12t]_0^{15}=-405/2$. Distance adds the magnitudes of the two triangular areas: $459/2$.

05

A particle has $v(t)=2(t-14)$ on $0 \leq t \leq 20$. Find displacement and total distance.

Velocity changes sign at $t=14$. Displacement = $2[t^2/2-14t]_0^{20}=-160$. Distance adds the magnitudes of the two triangular areas: 232.

06

A particle has $v(t)=3(t-4)$ on $0 \leq t \leq 11$. Find displacement and total distance.

Velocity changes sign at $t=4$. Displacement = $3[t^2/2-4t]_0^{11}=99/2$. Distance adds the magnitudes of the two triangular areas: $195/2$.