

Intellectual Need Task for the Chain Rule

A rock is thrown into a pond, creating a circular ripple that travels outward. As the ripple travels, it displaces sediment on the bottom of the lake.

- $R(t)$ is the radius of the ripple t seconds after the rock hits the surface of the pond.
- $V(r)$ is the volume of displaced sediment from a ripple that has radius r .
- The total displacement is given by $D(t) = V(R(t))$.

t	$R(t)$
1	2
2	4
3	6
4	8
5	10
6	12
7	14
8	16
9	18
10	20

r	$V(r)$
1	5
2	10
3	15
4	20
5	25
6	30
7	35
8	40
9	45
10	50

Determine the average rate of change of $D(t)$ with respect to t between $t=1$ and $t=3$.
What about between $t=1$ and $t=4$?