**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*)).

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

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

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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?