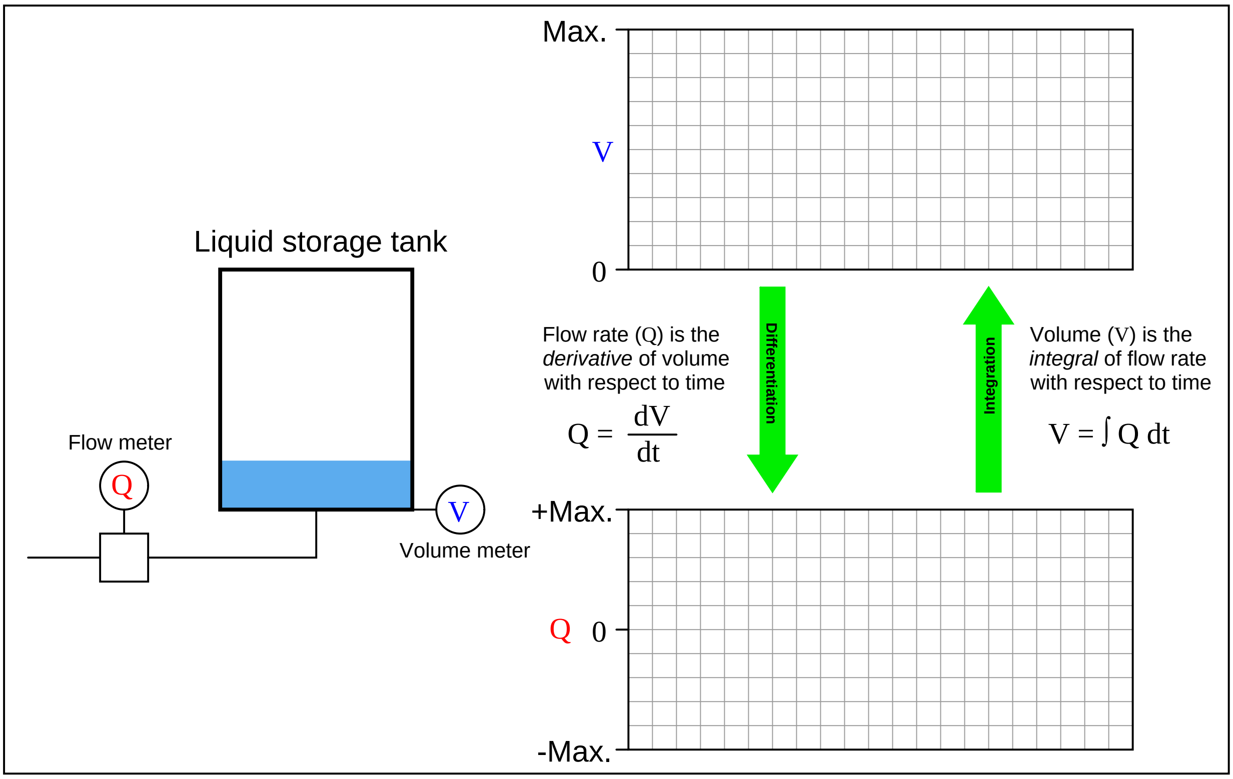
Questions

Question 1

Animation: differentiation and integration (calculus)

This question consists of a series of images (one per page) that form an animation. Flip the pages with your fingers to view this animation (or click on the "next" button on your viewer) frame-by-frame.

The following animation shows two variables graphed over time, one being the derivative of the other and the other being the integral of the first.


Liquid storage tank
Flow meter
Q
V
Volume meter
Max.
V
0
Flow rate (Q) is the *derivative* of volume with respect to time
$Q = \frac{dV}{dt}$
Differentiation
Integration
Volume (V) is the *integral* of flow rate with respect to time
$V = \int Q \, dt$
+Max.
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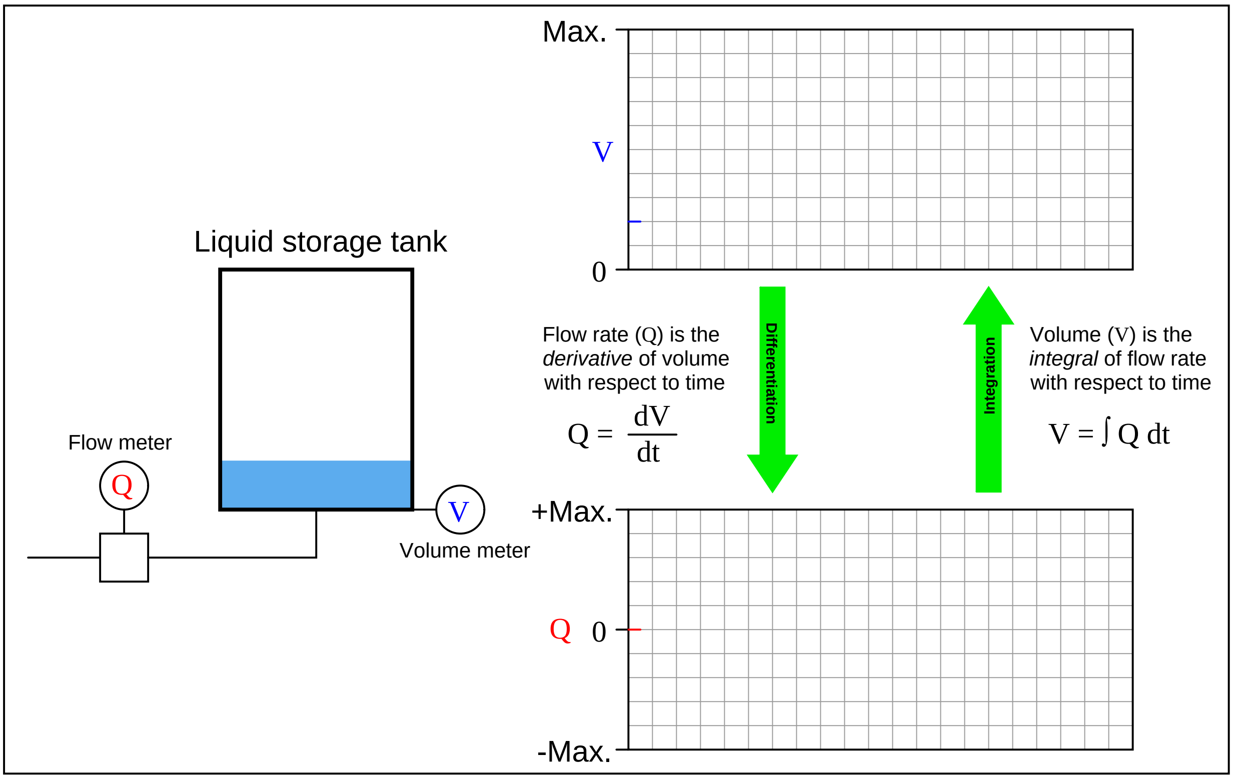
-Max.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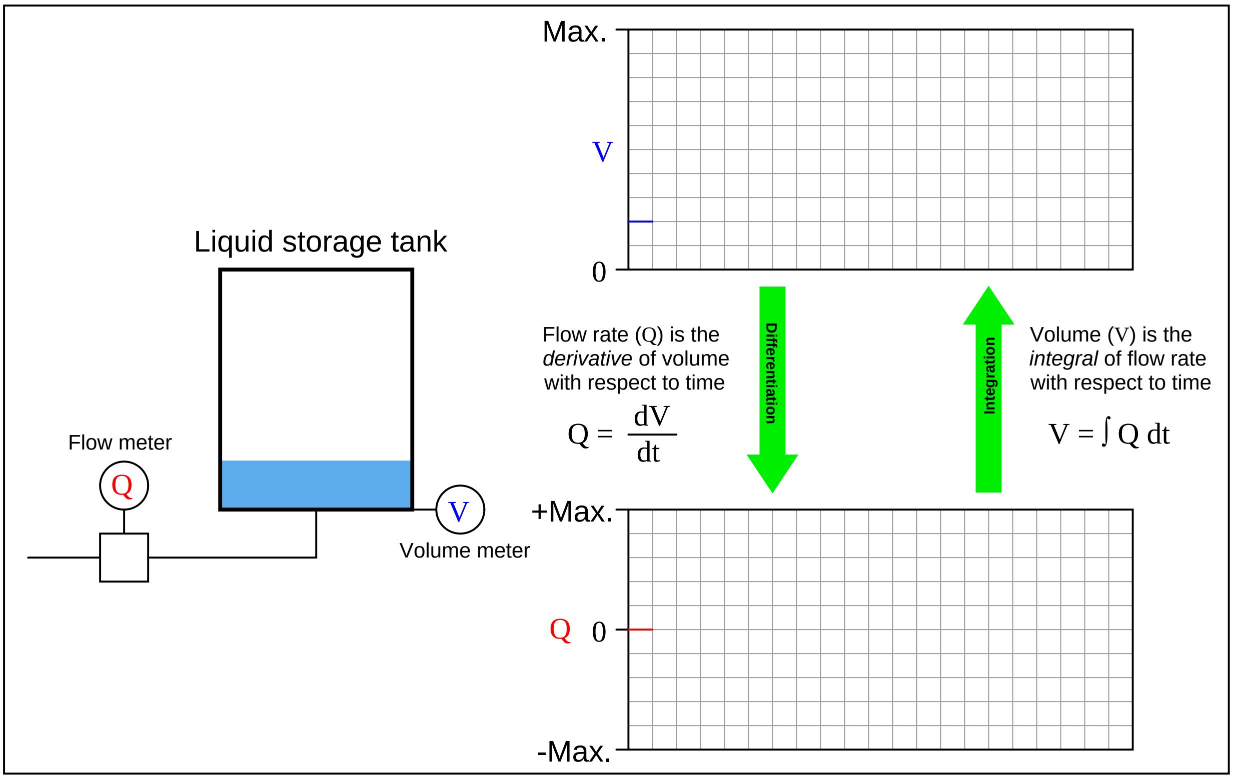
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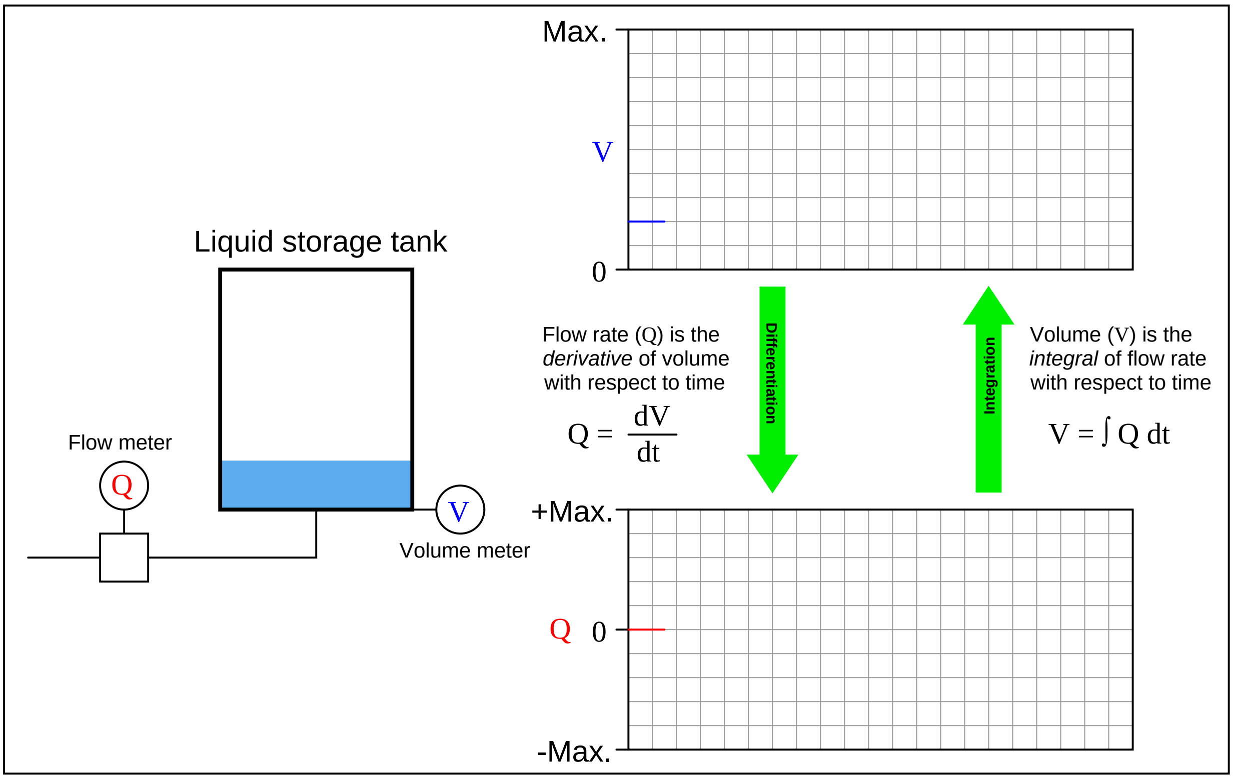
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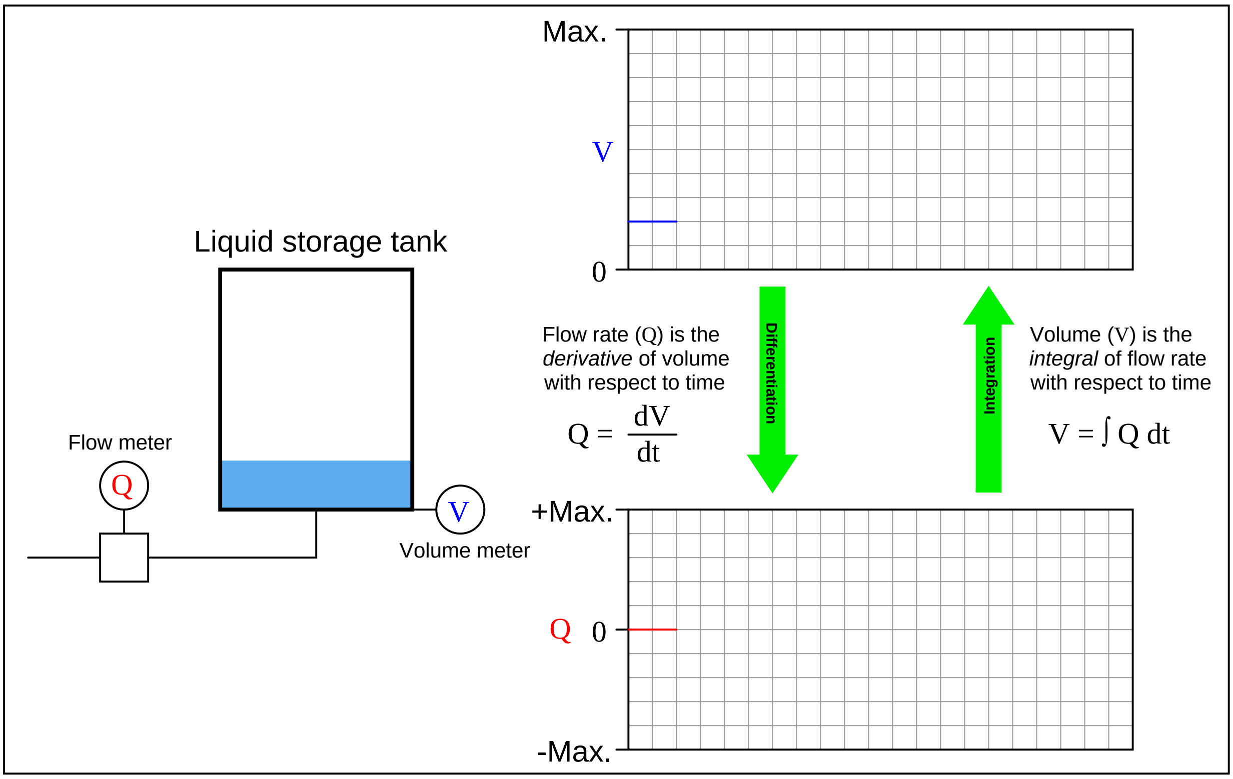
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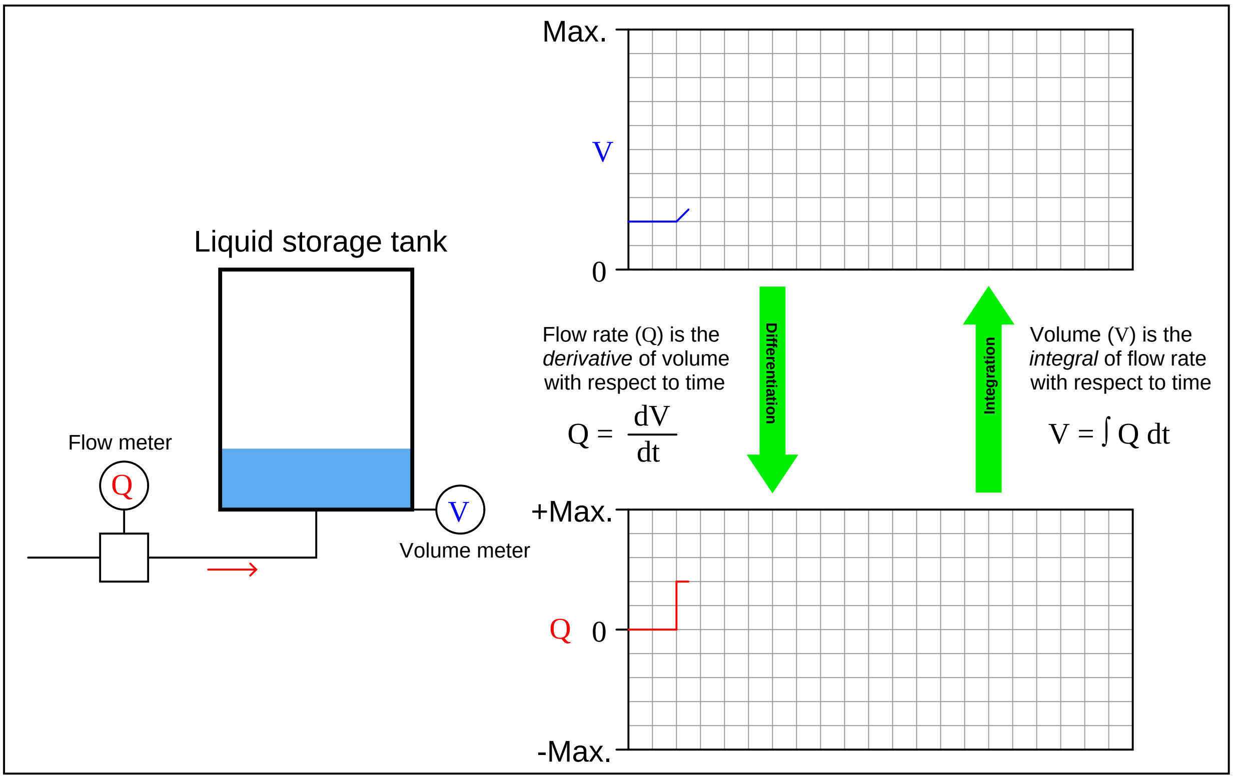
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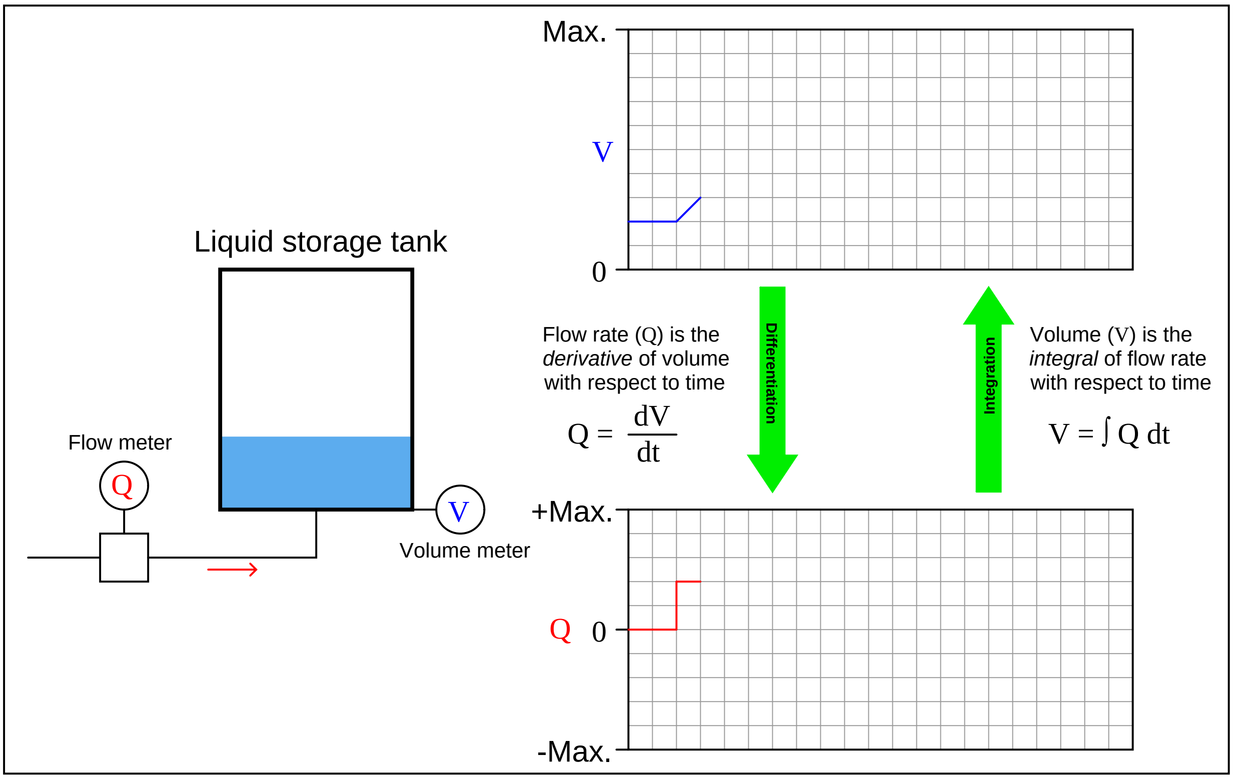
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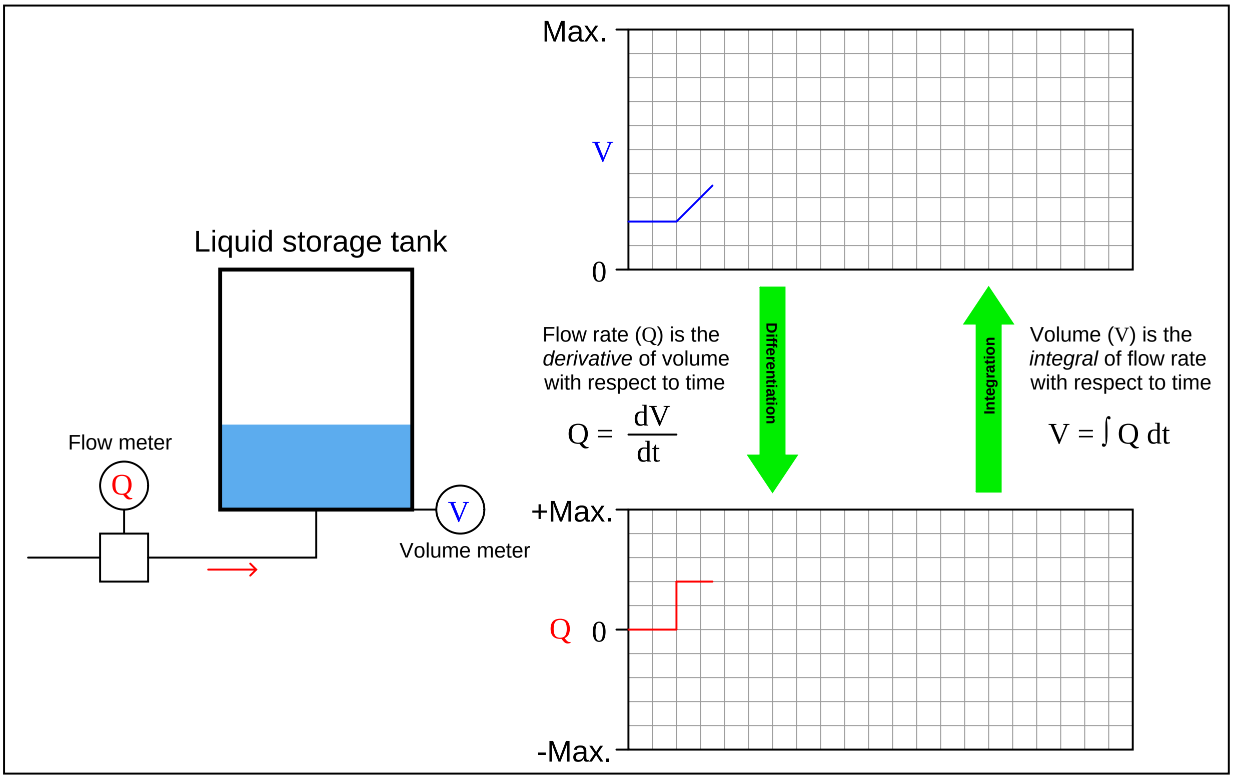
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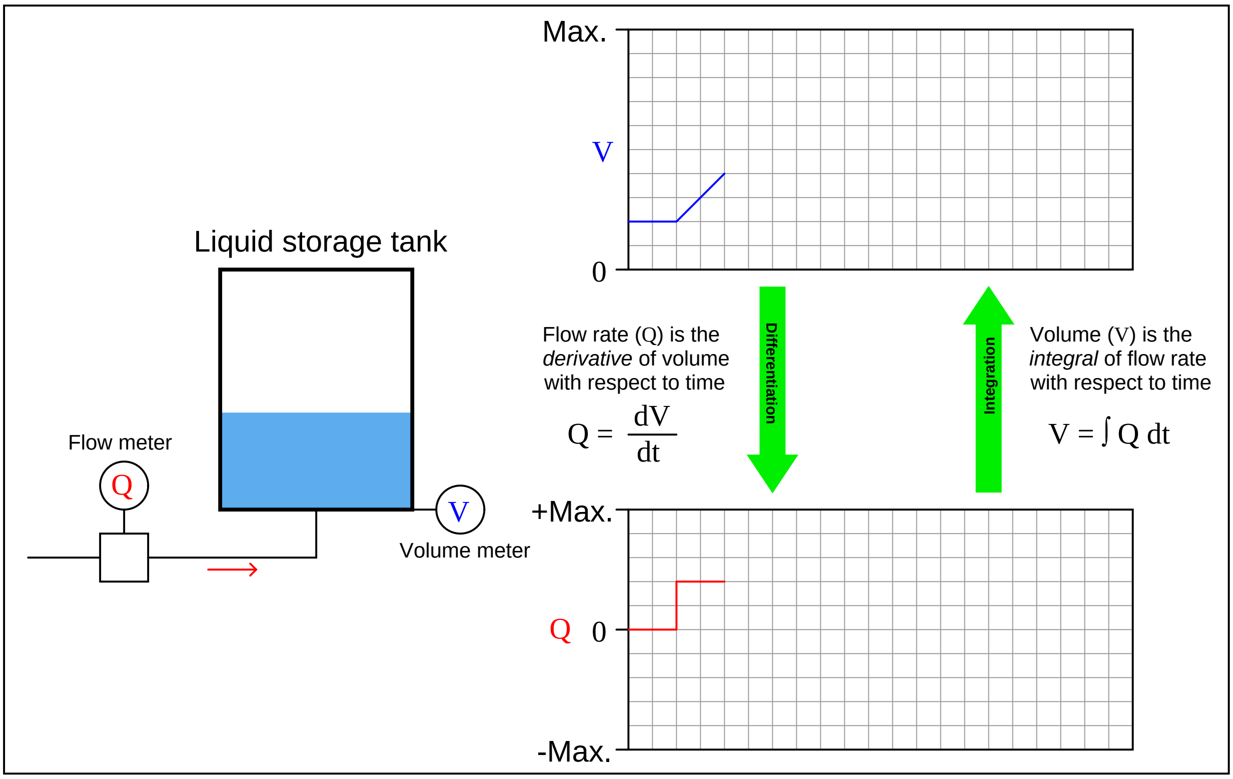
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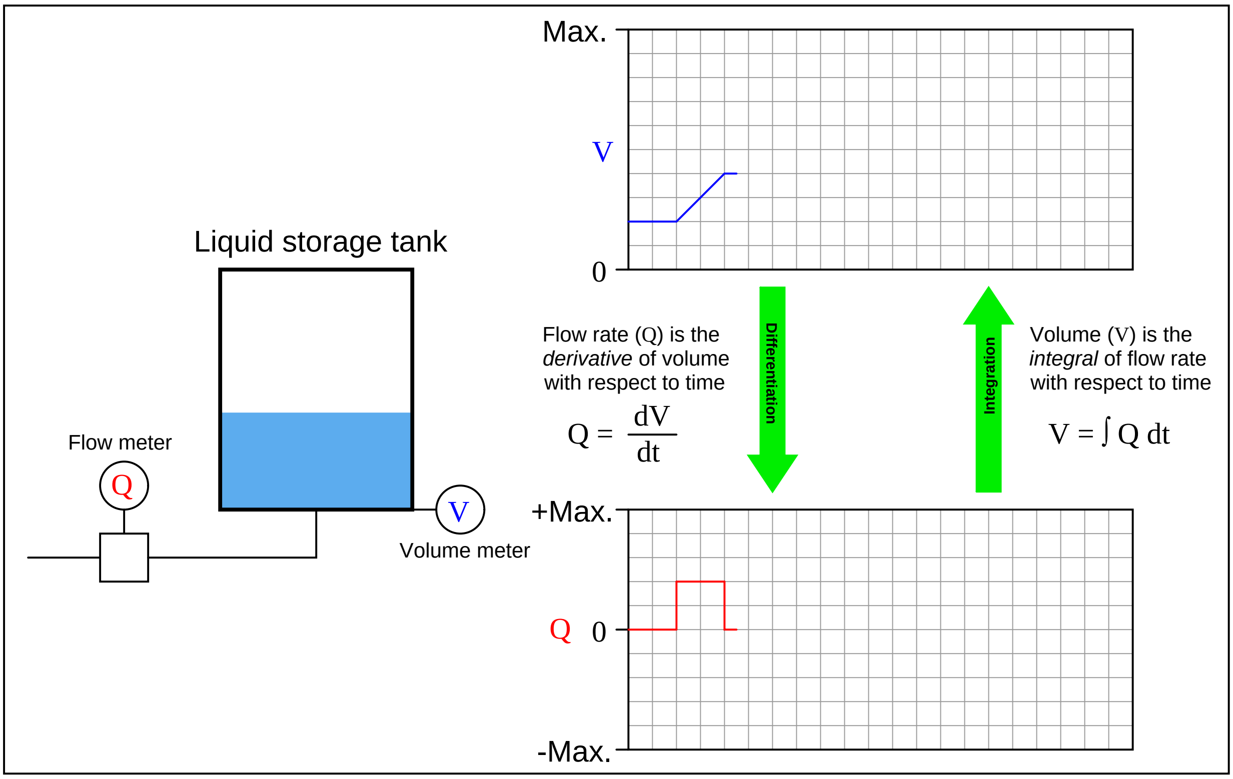
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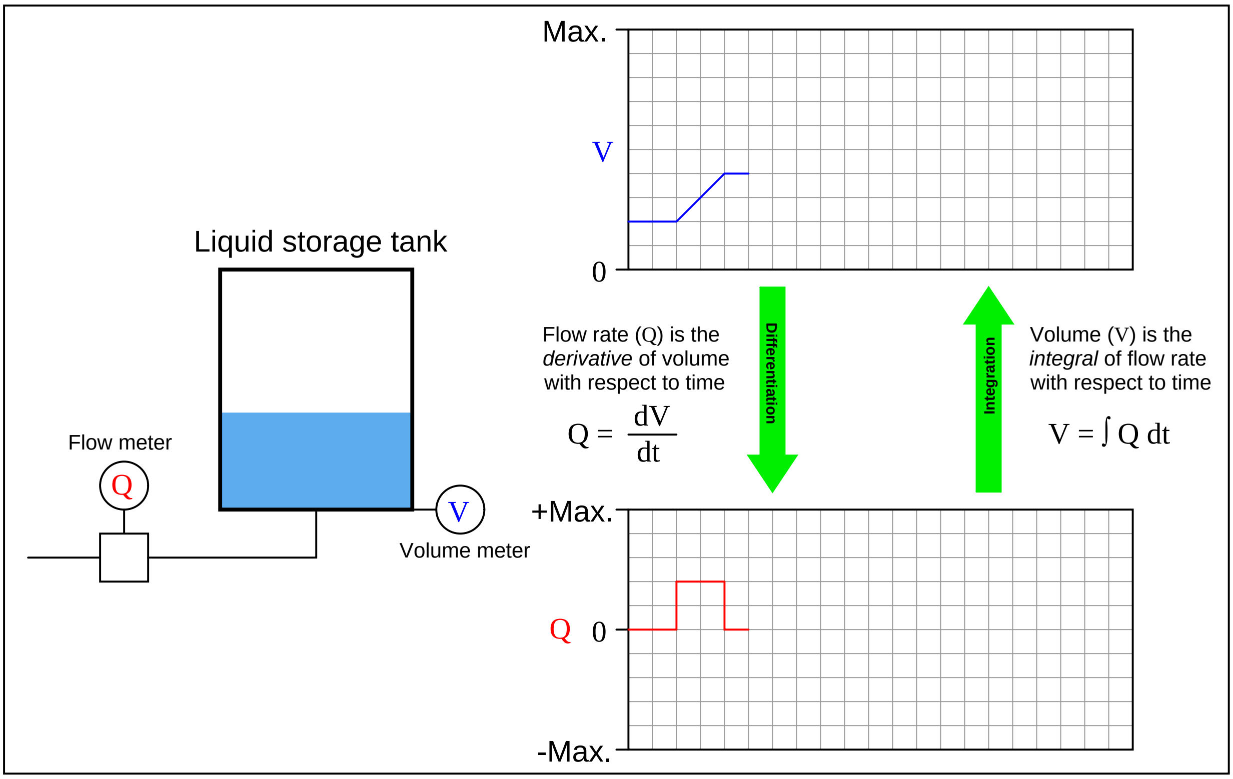
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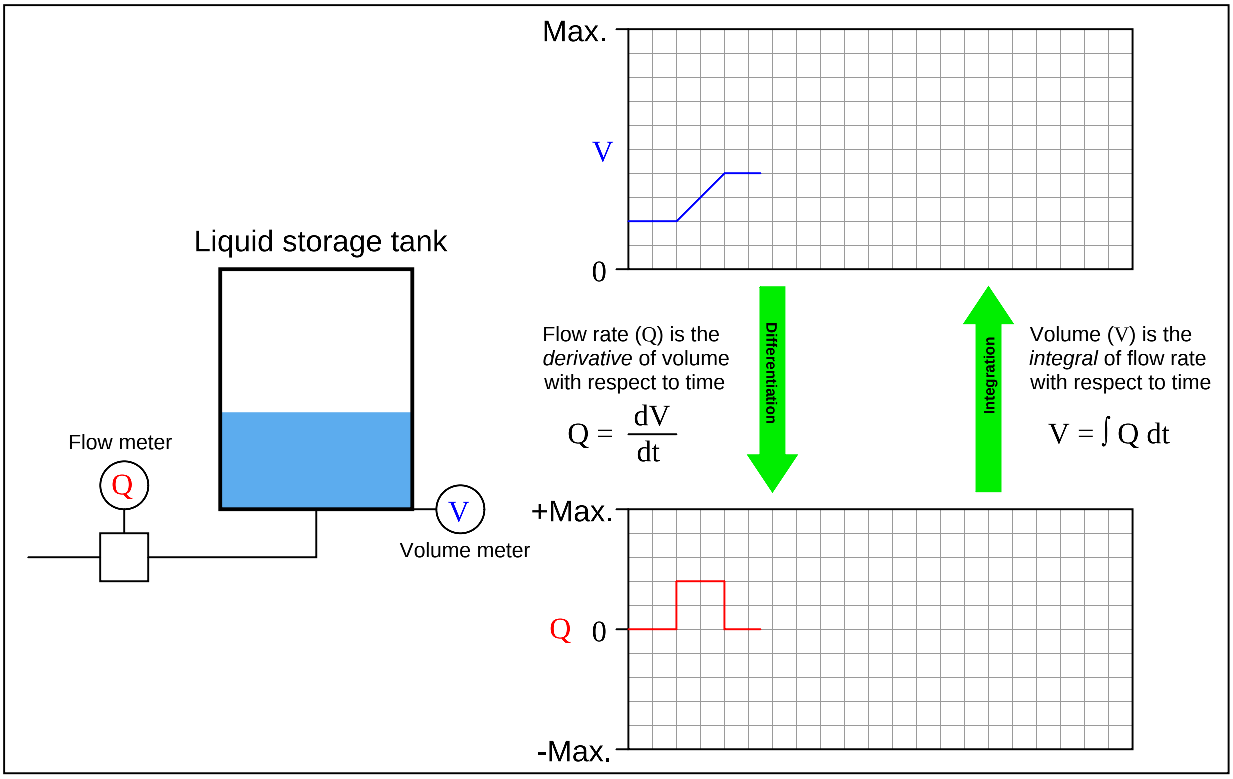
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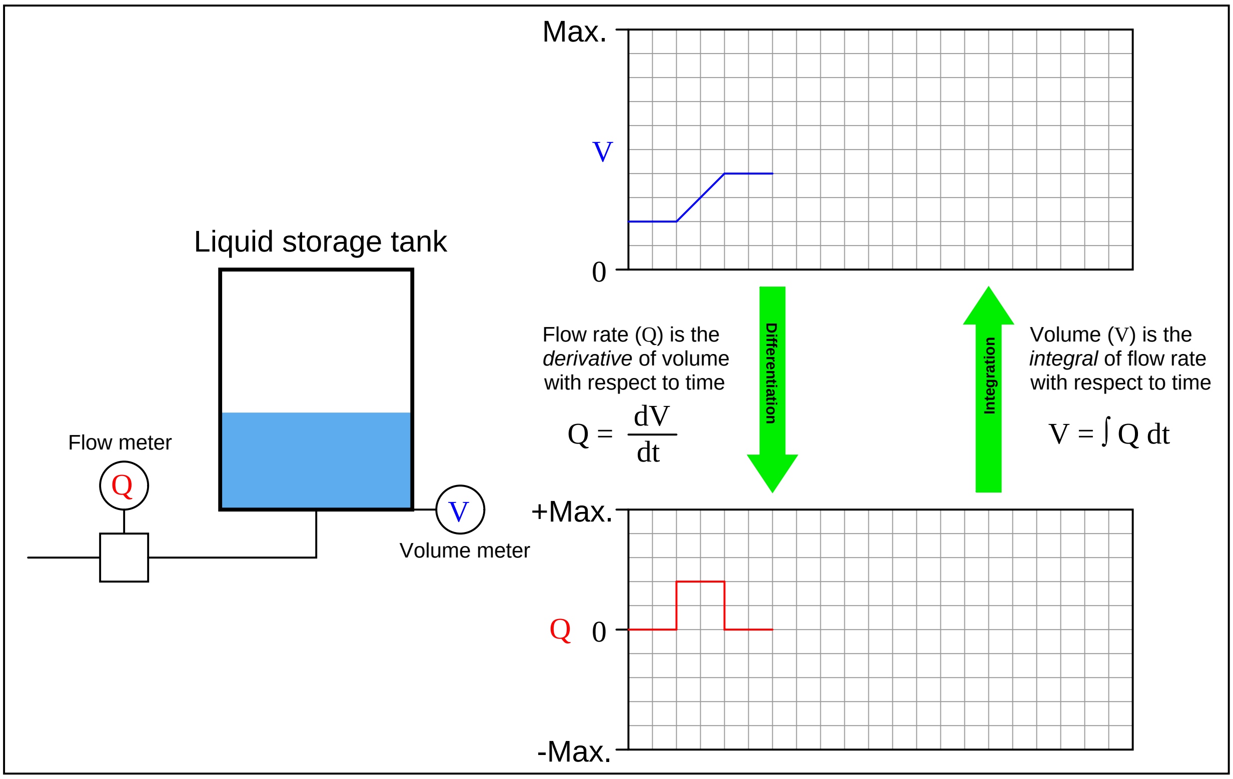
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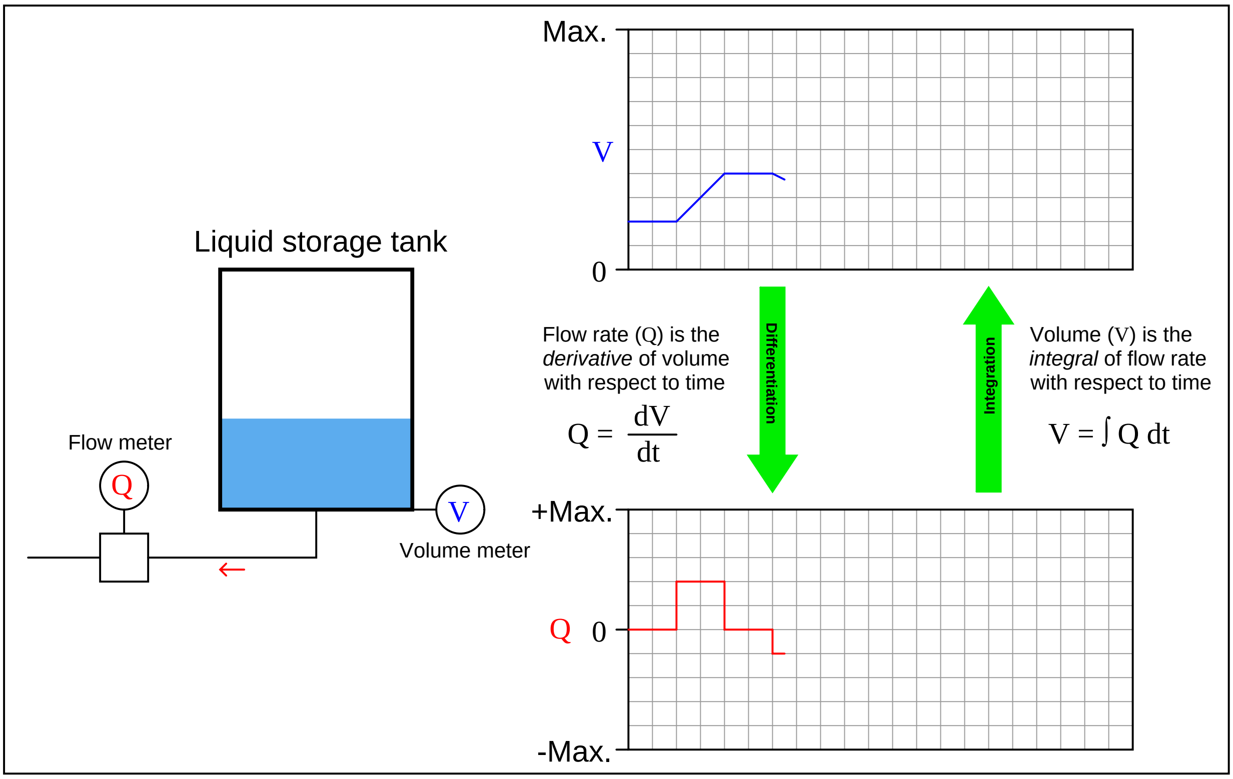
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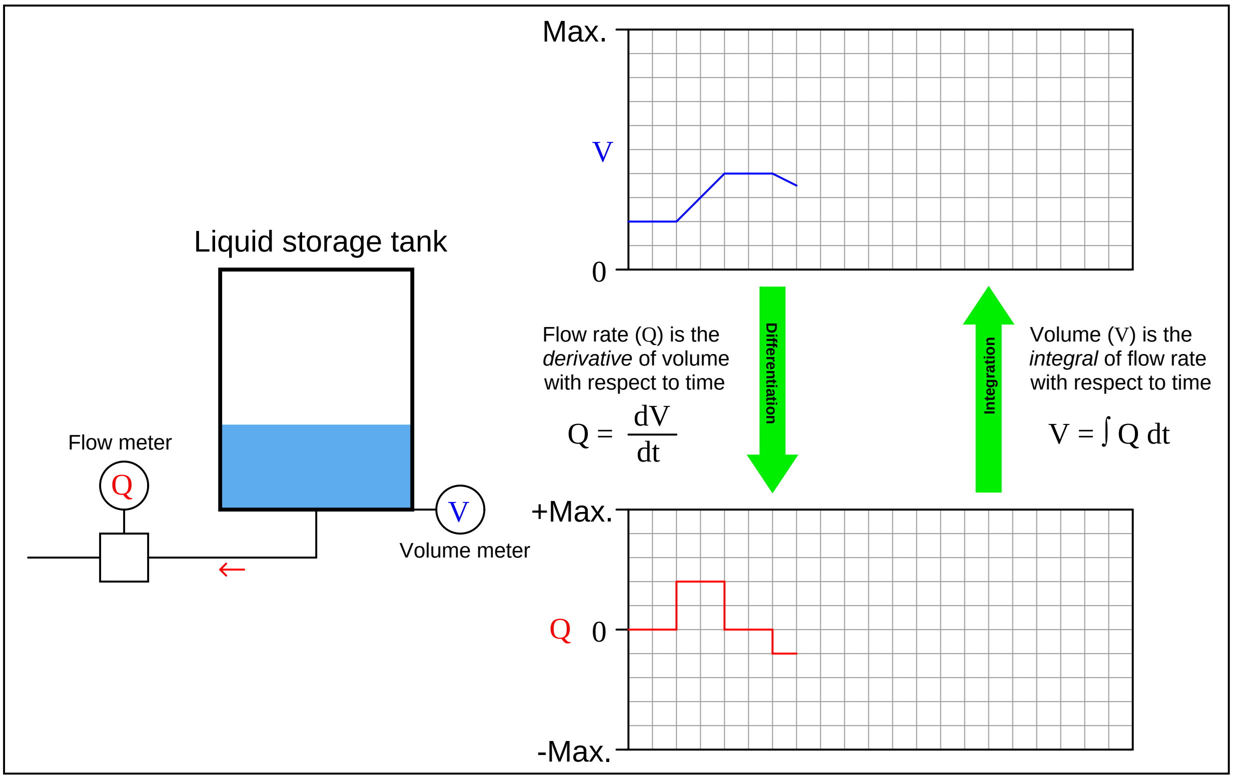
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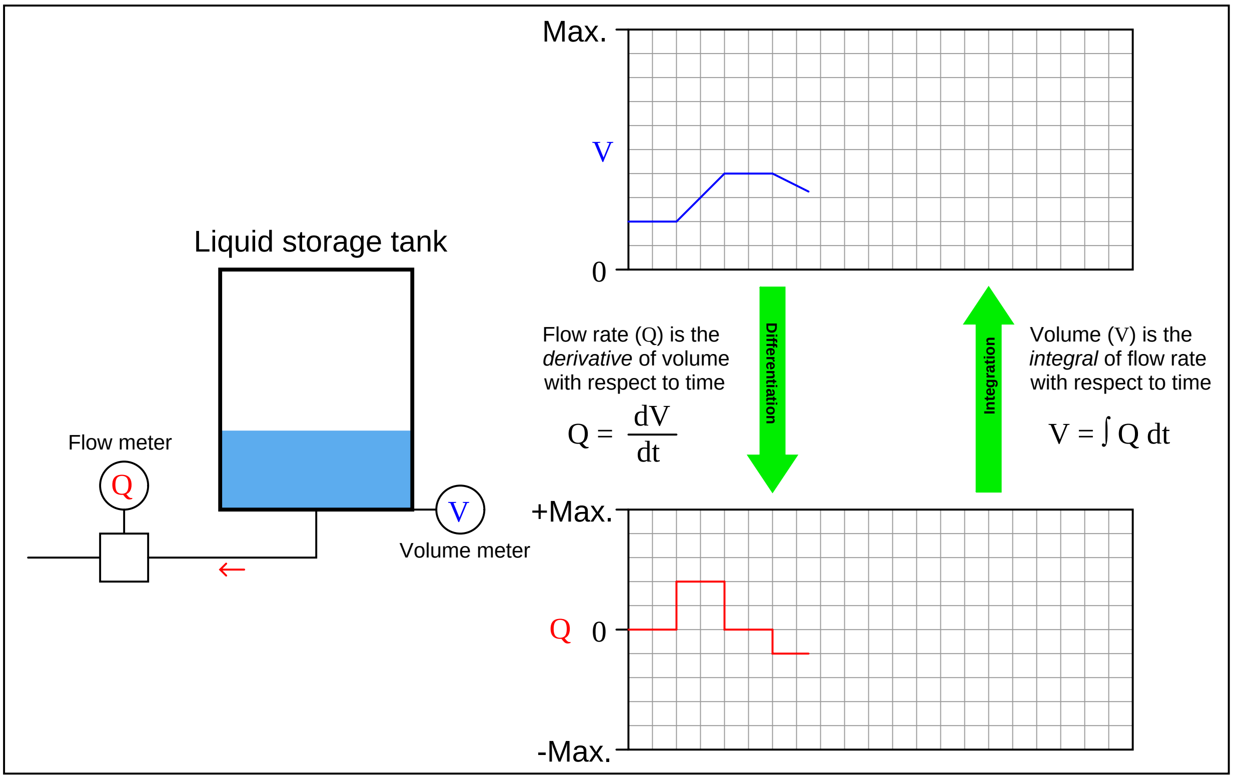
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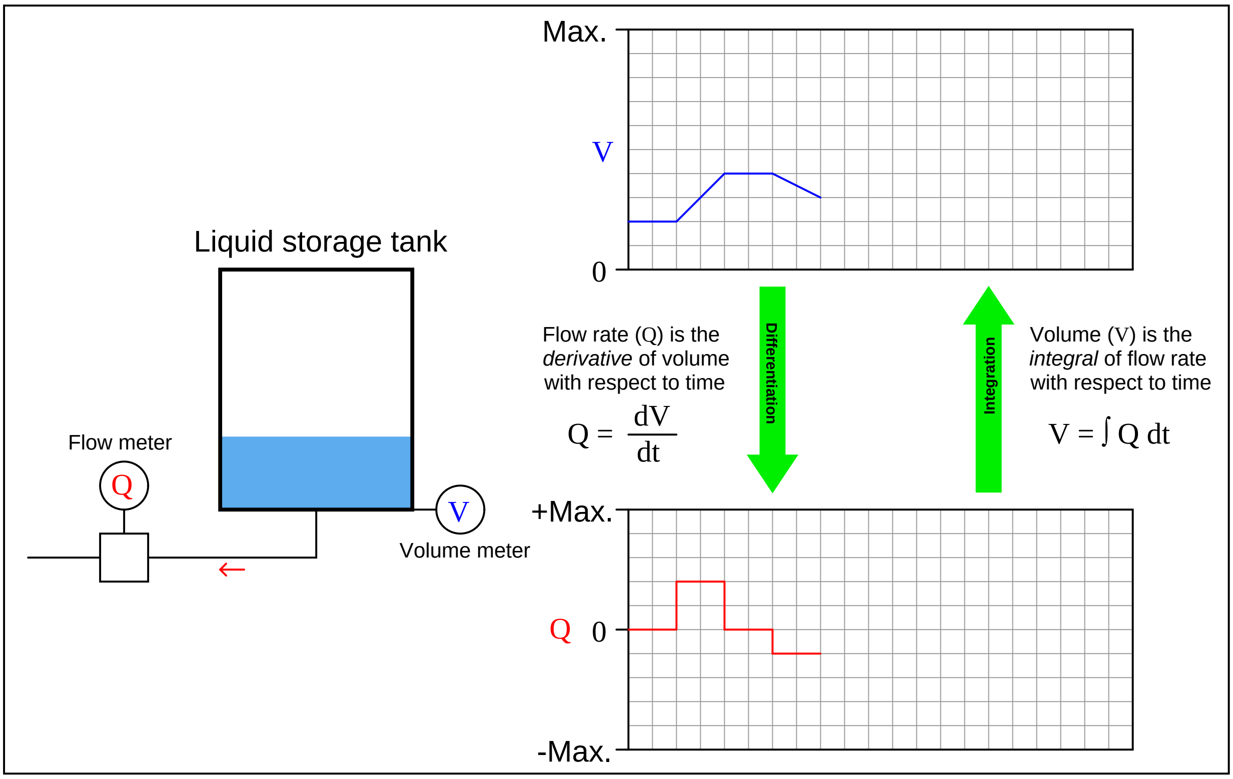
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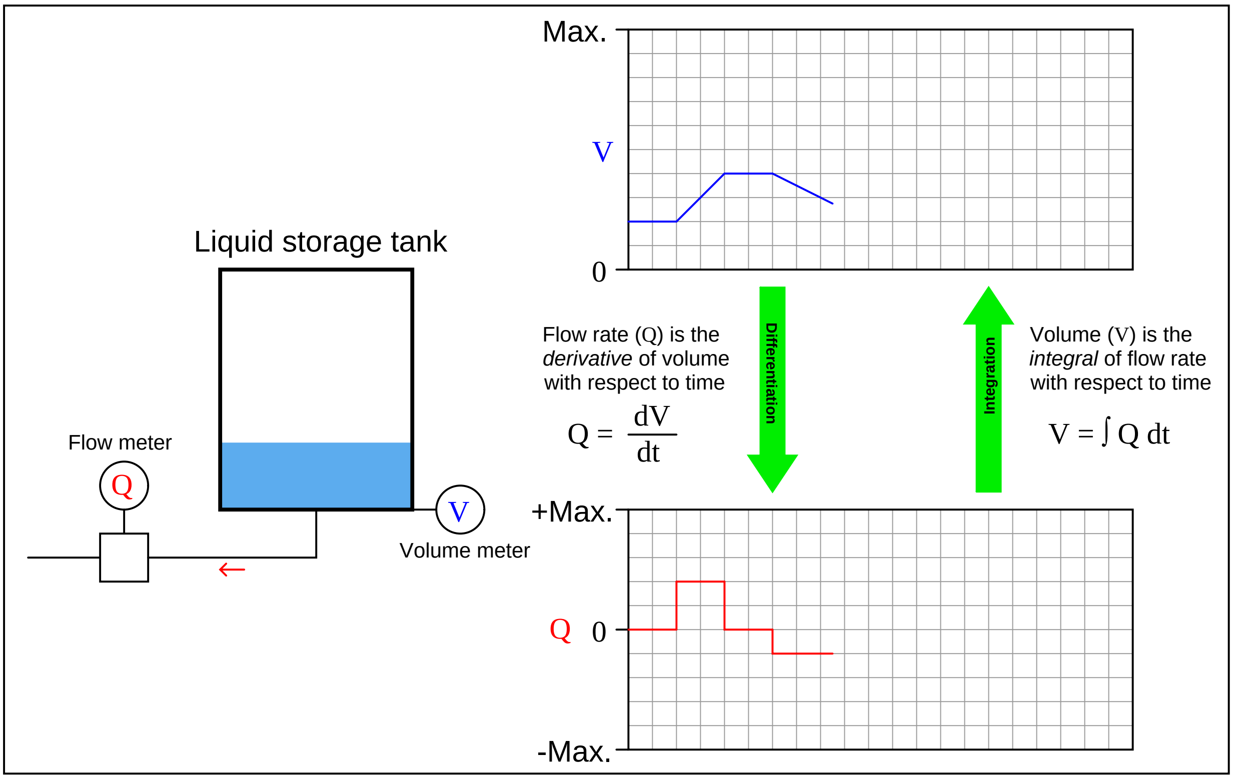
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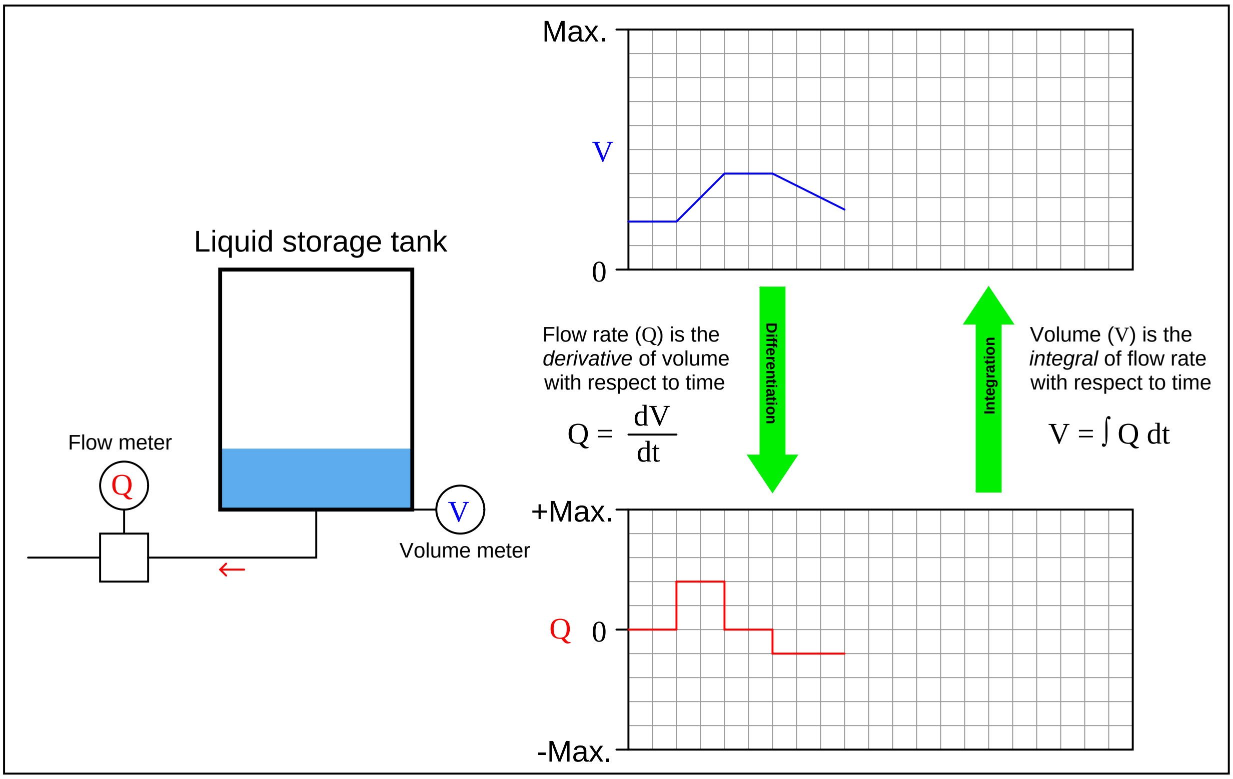
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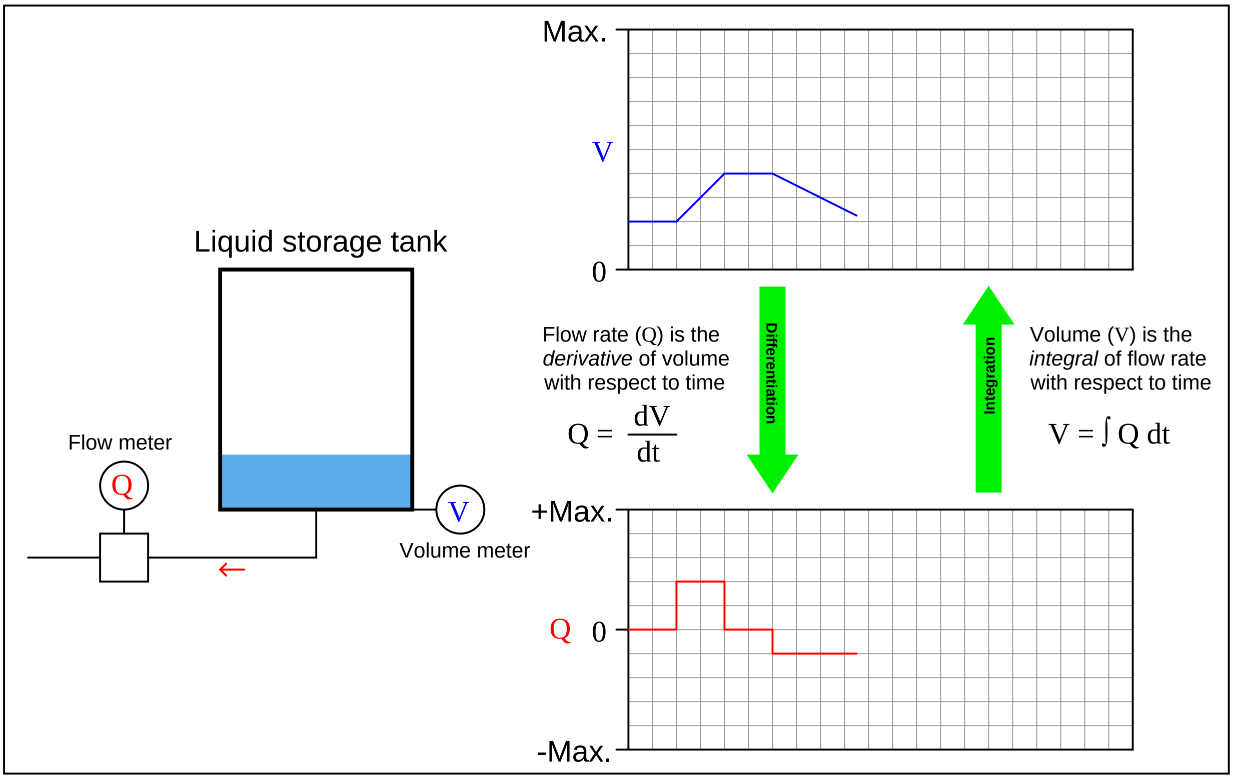
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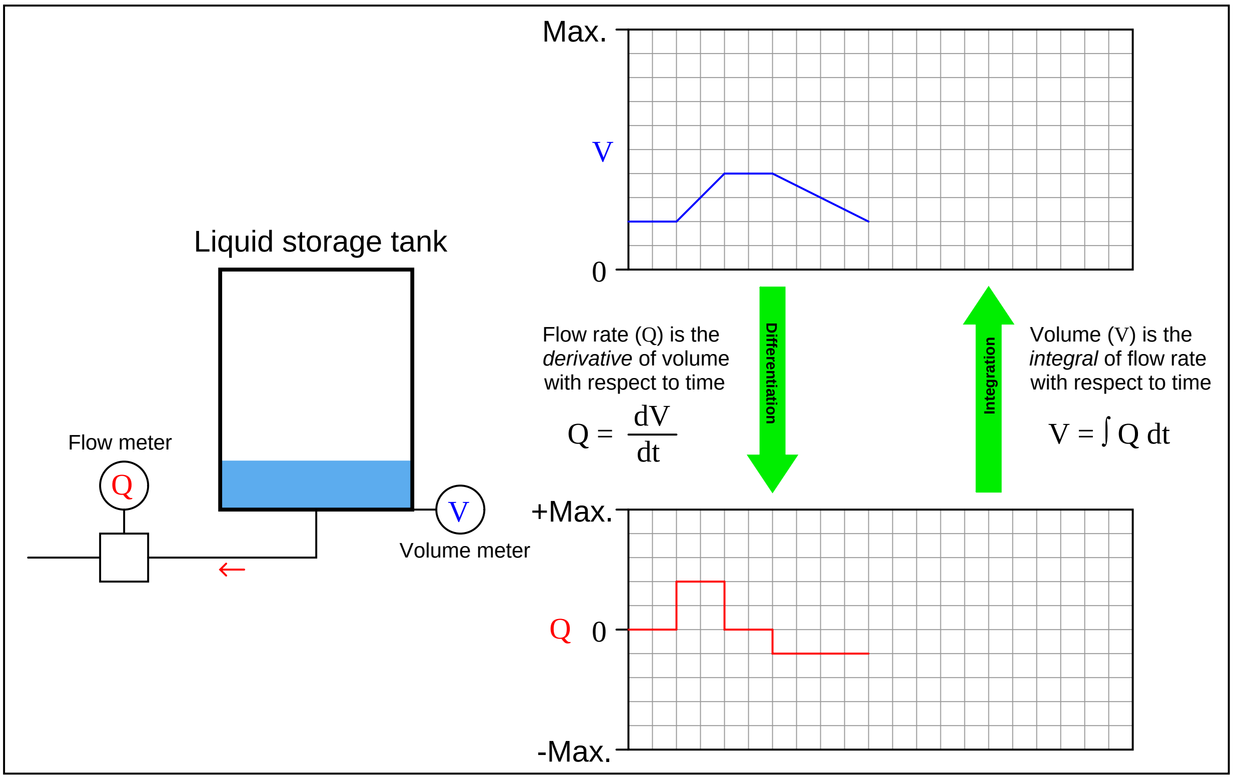
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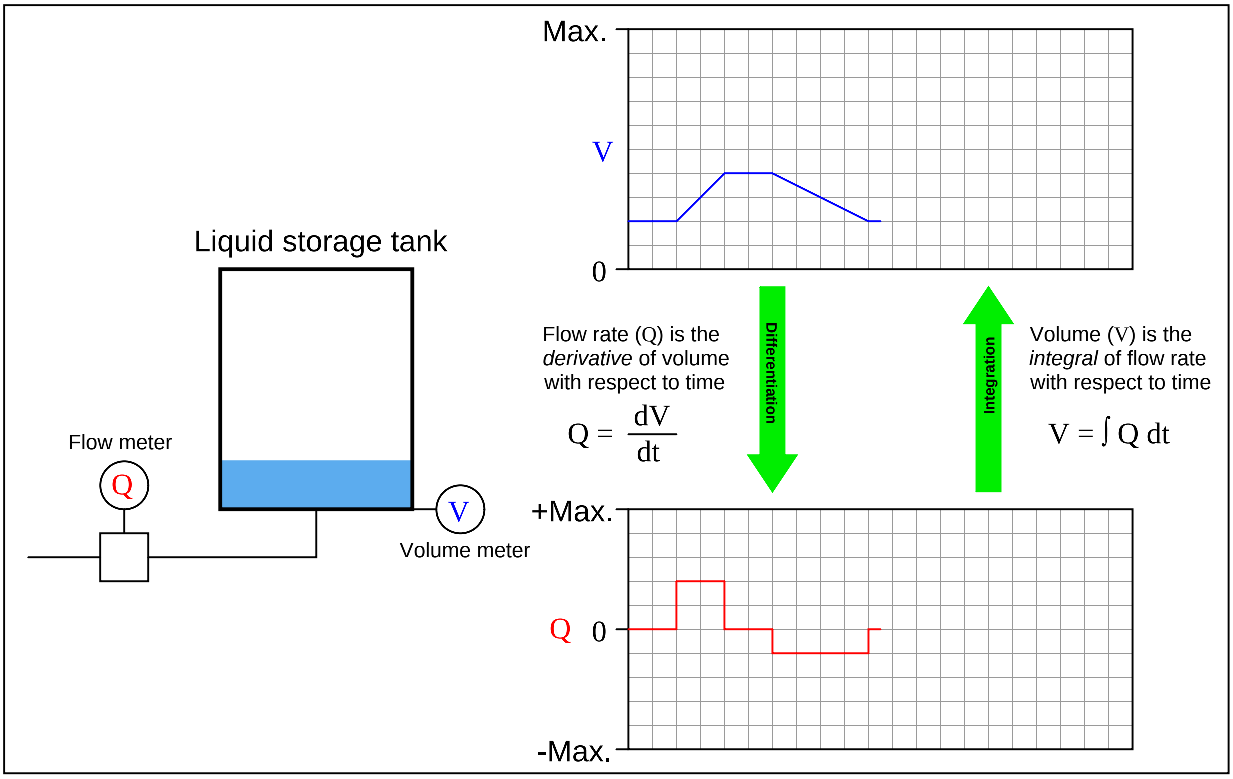
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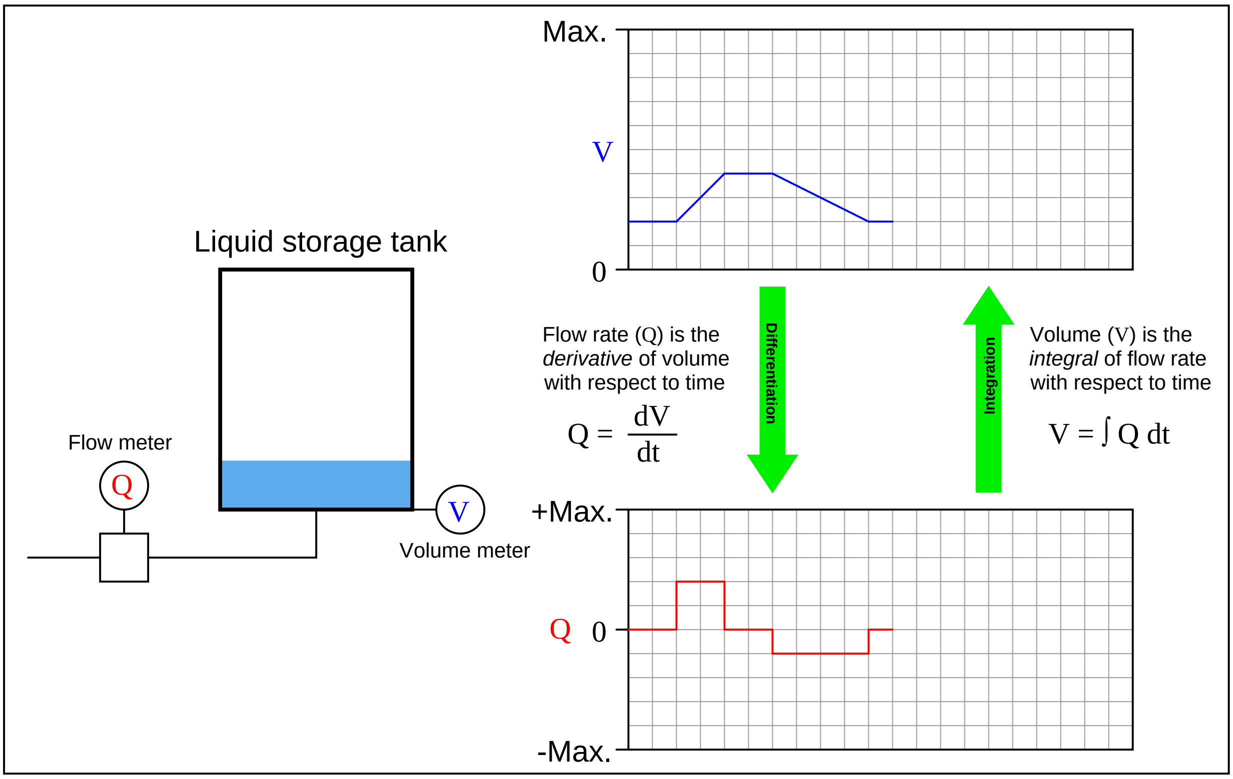
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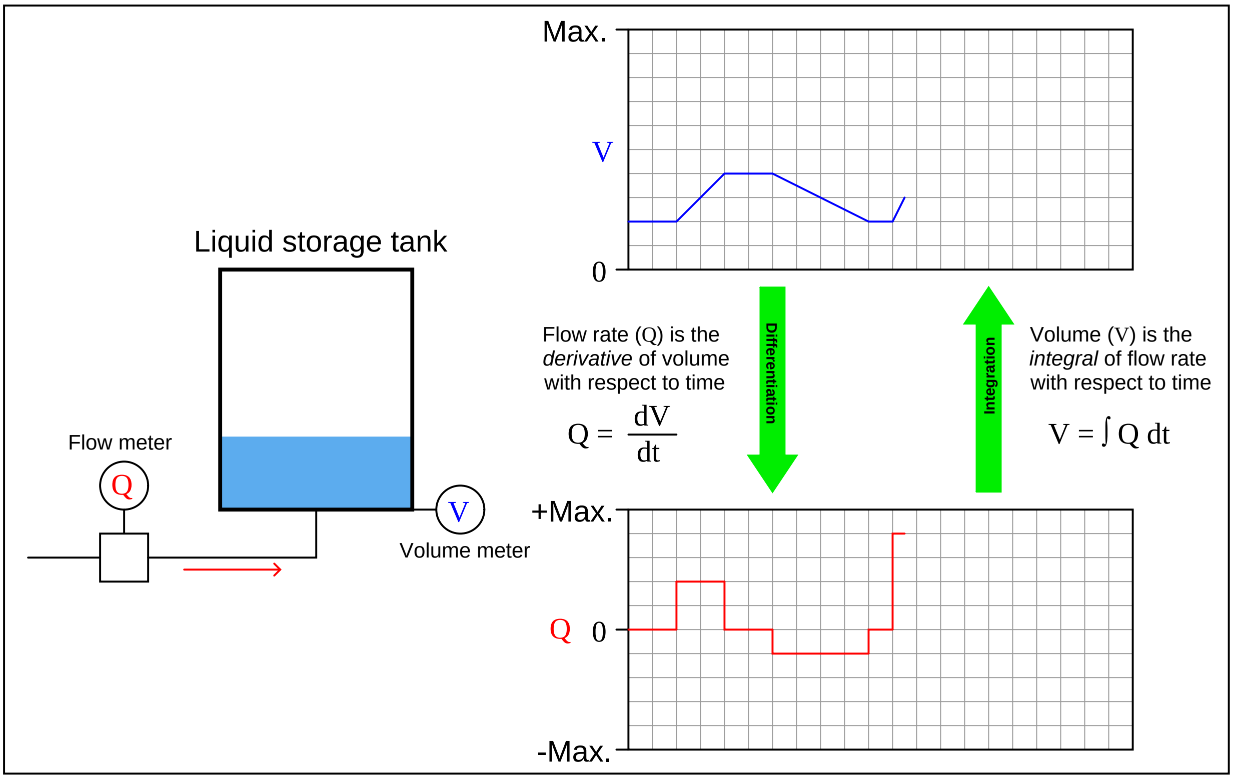
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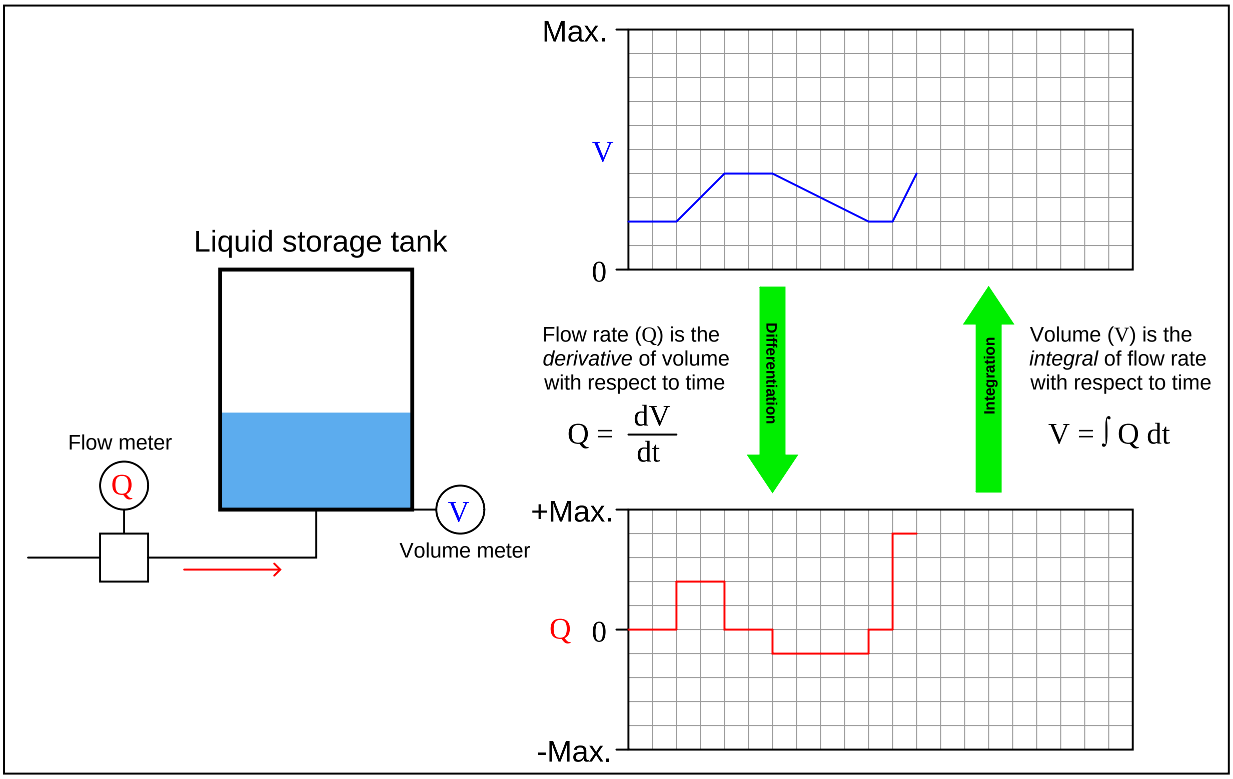
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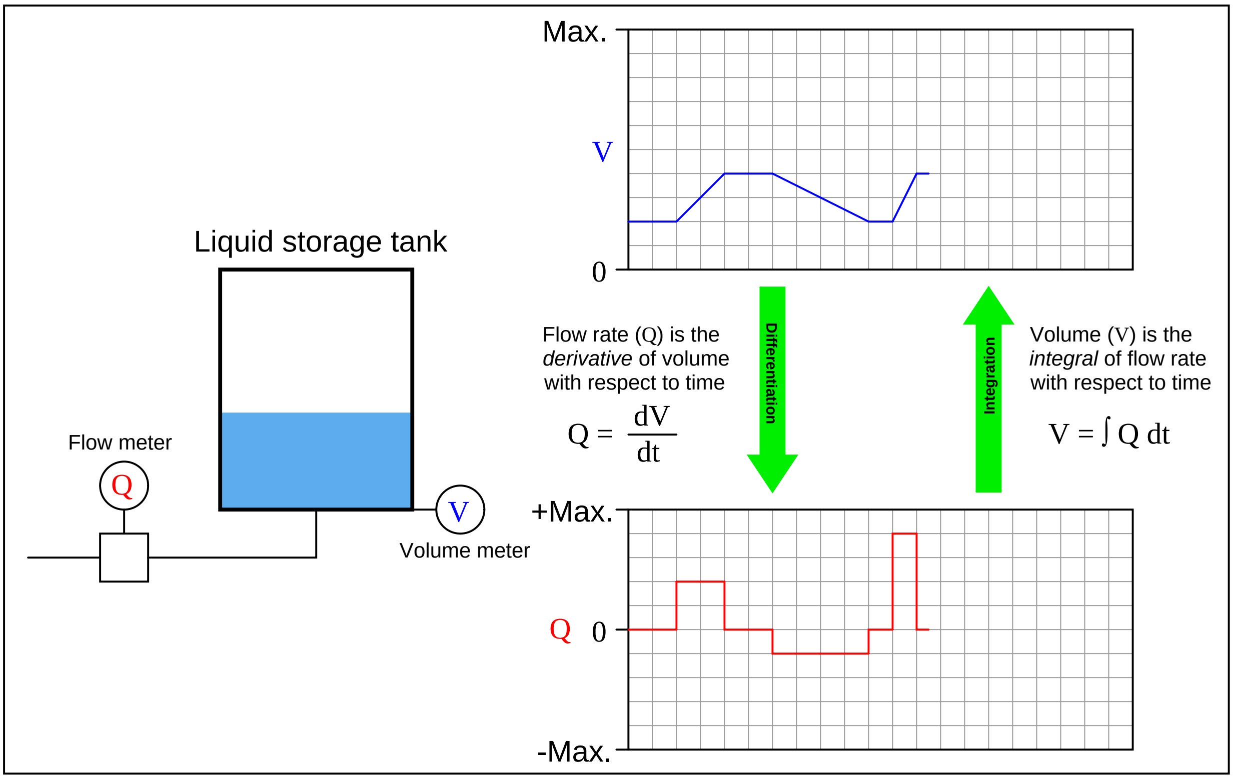
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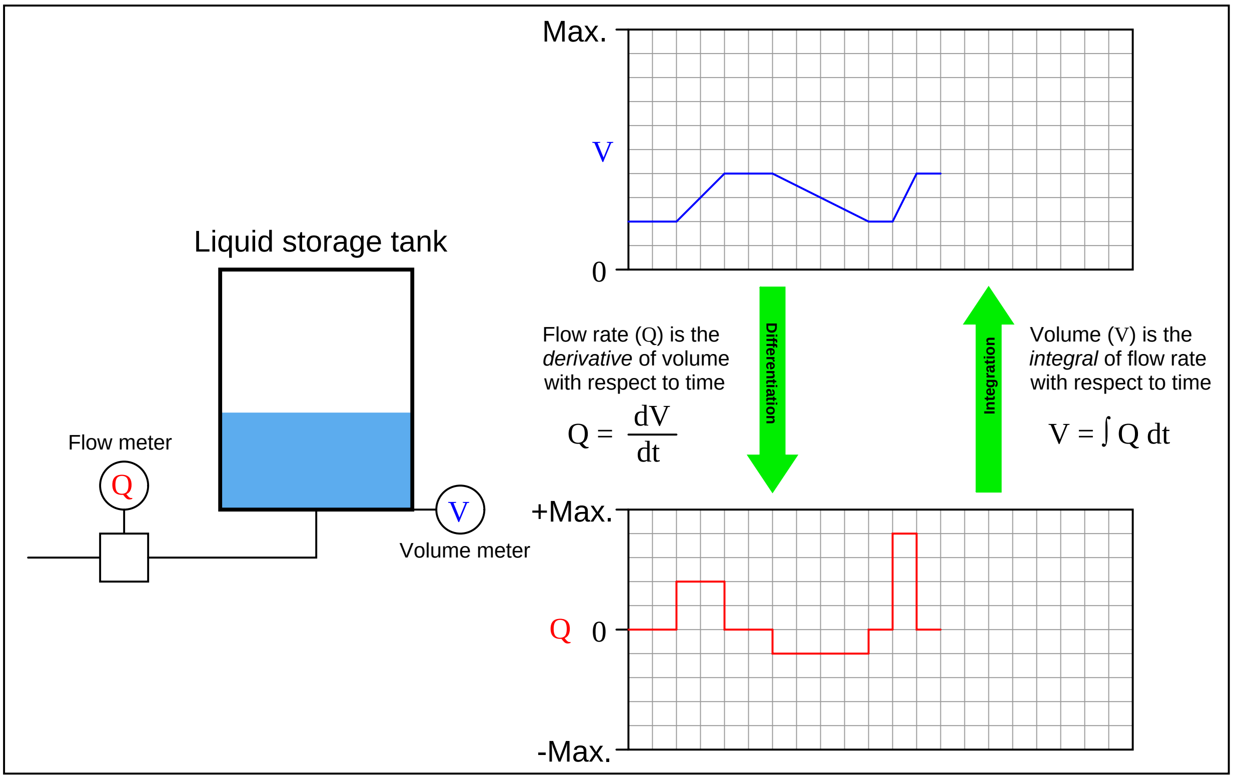
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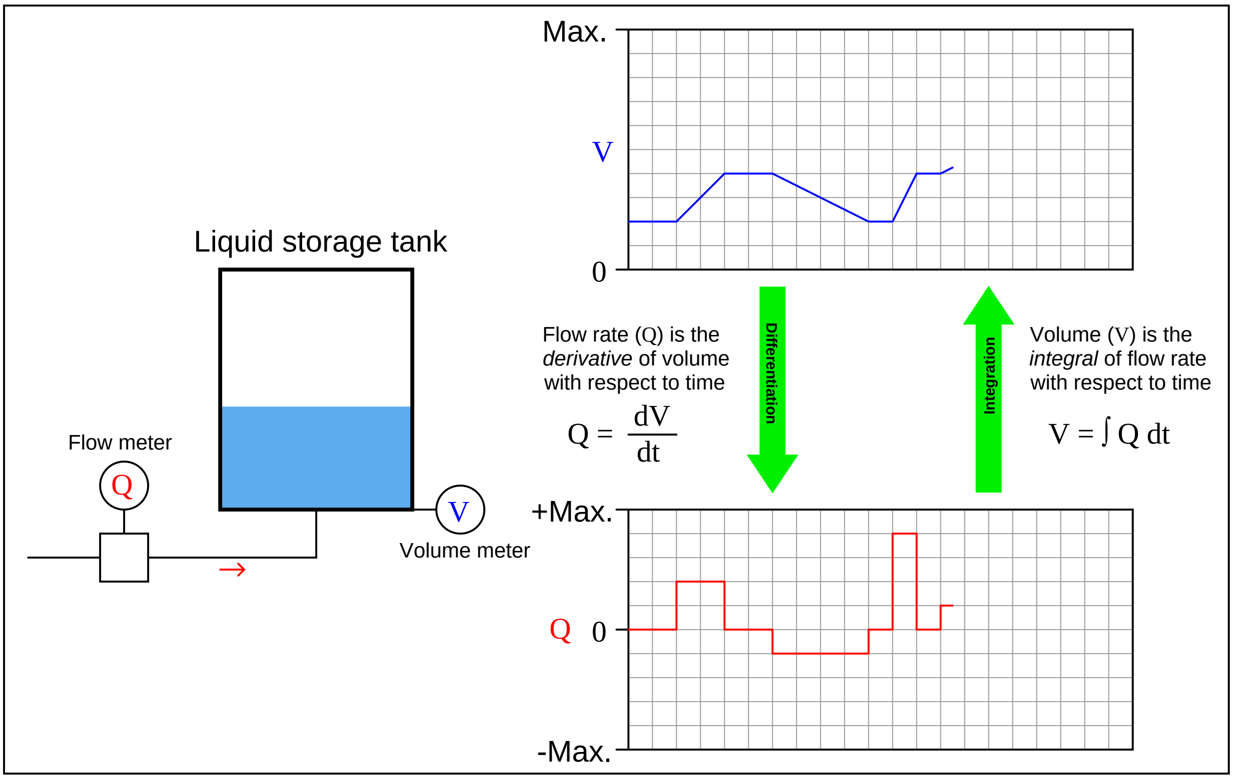
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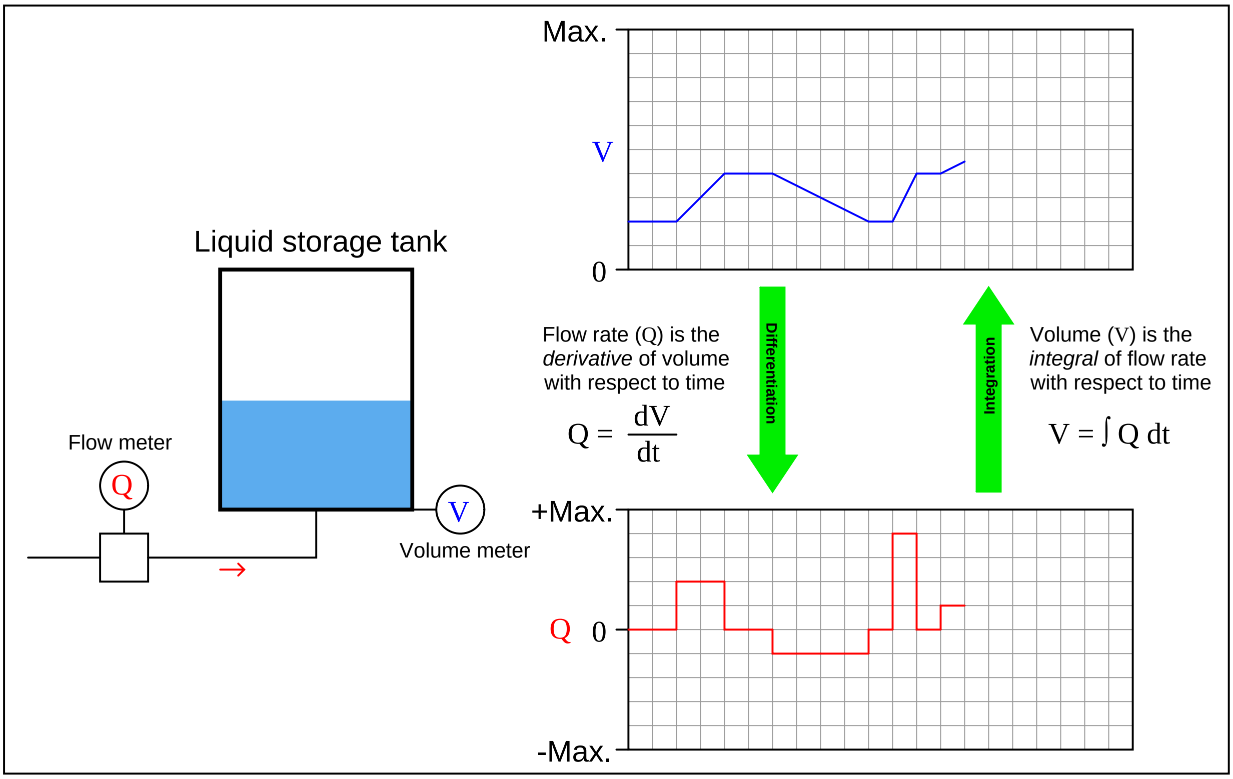
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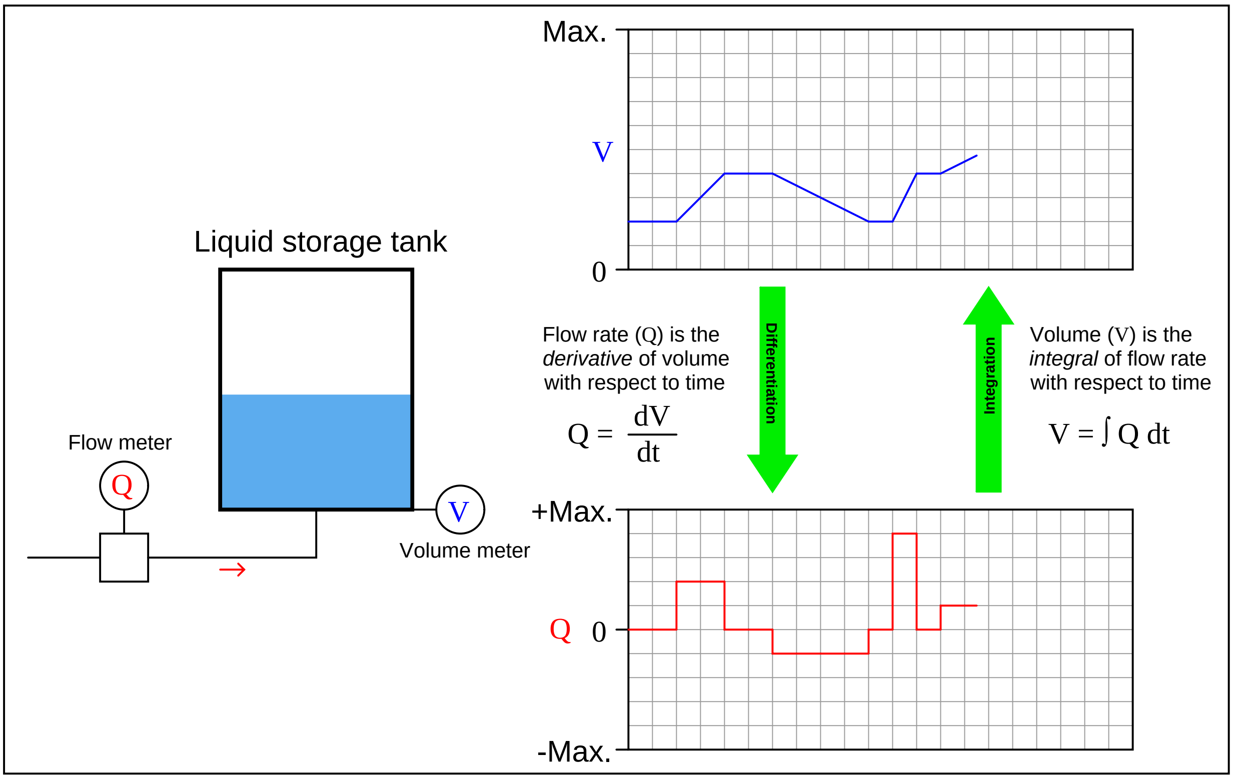
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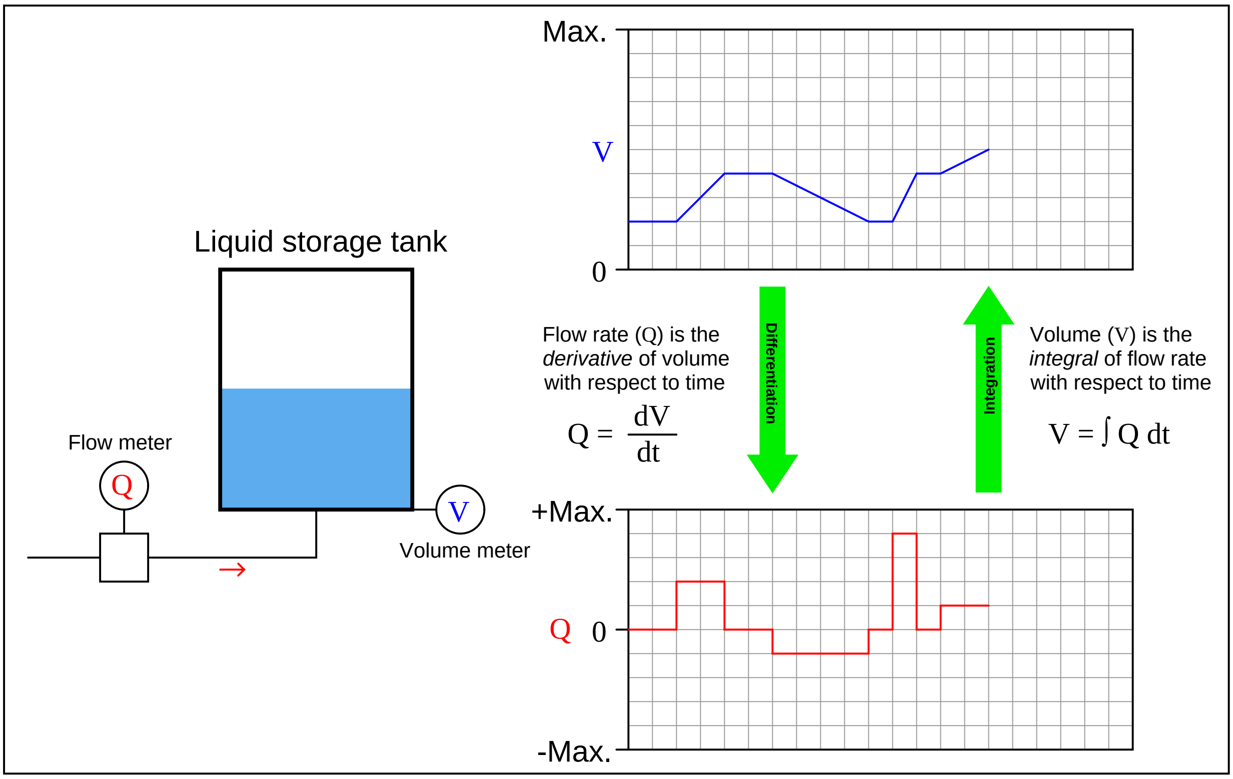
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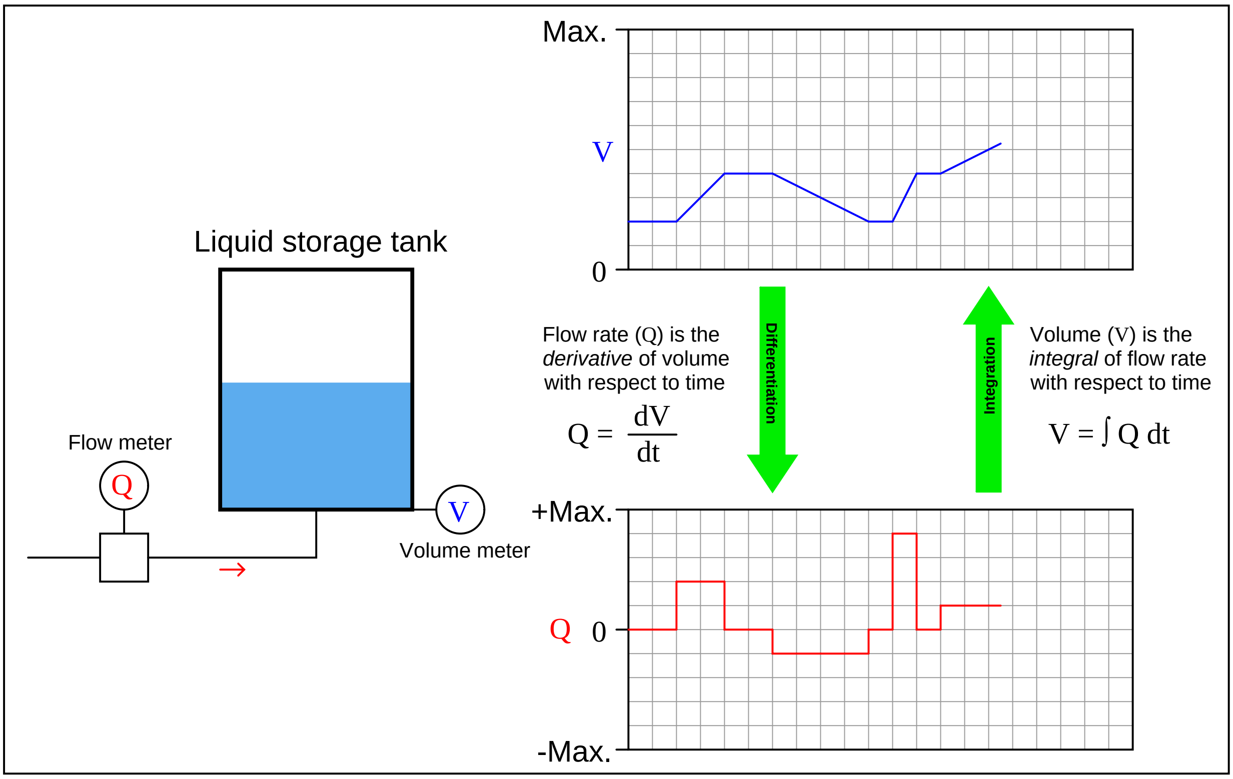
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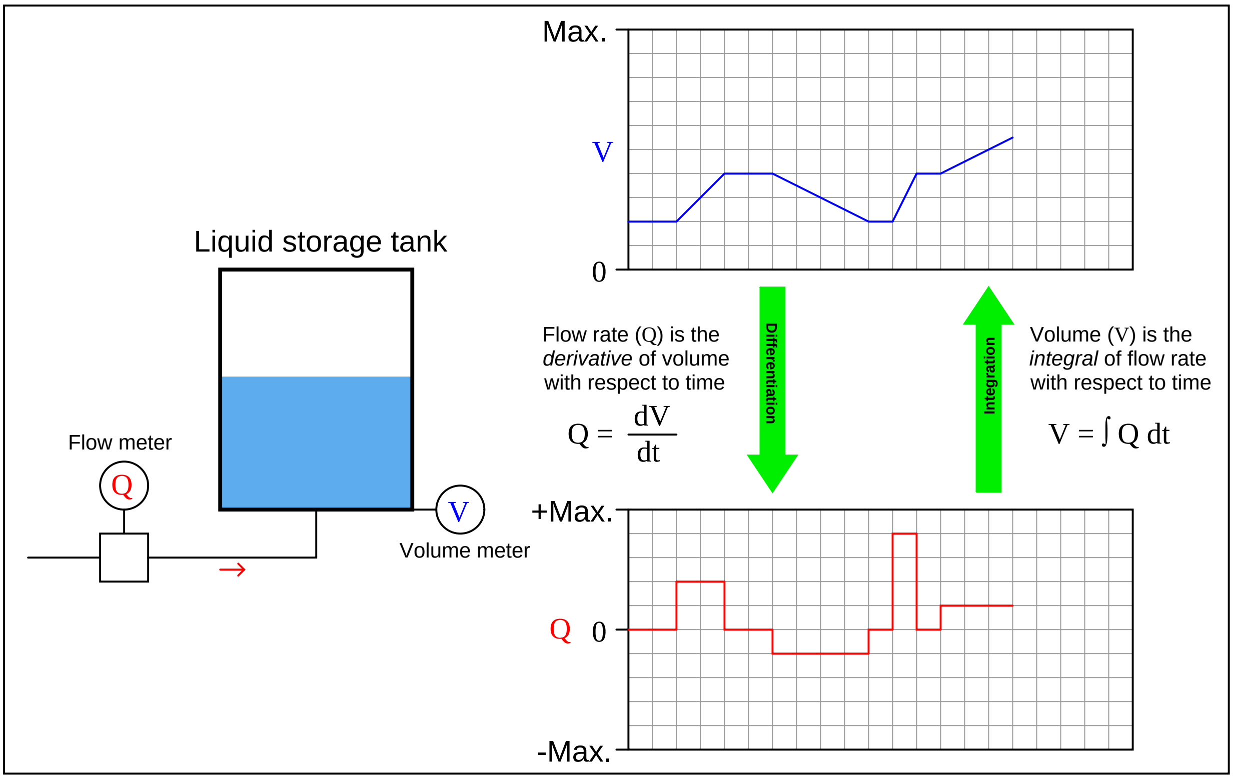
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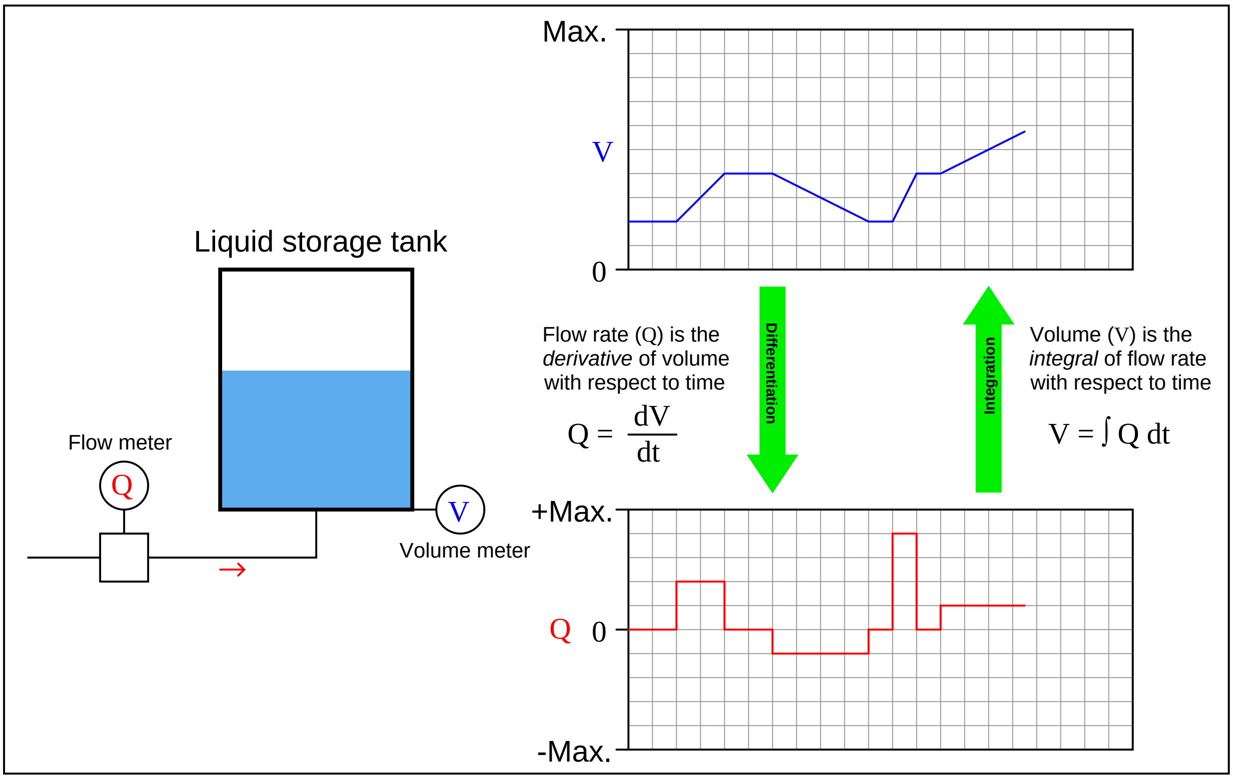
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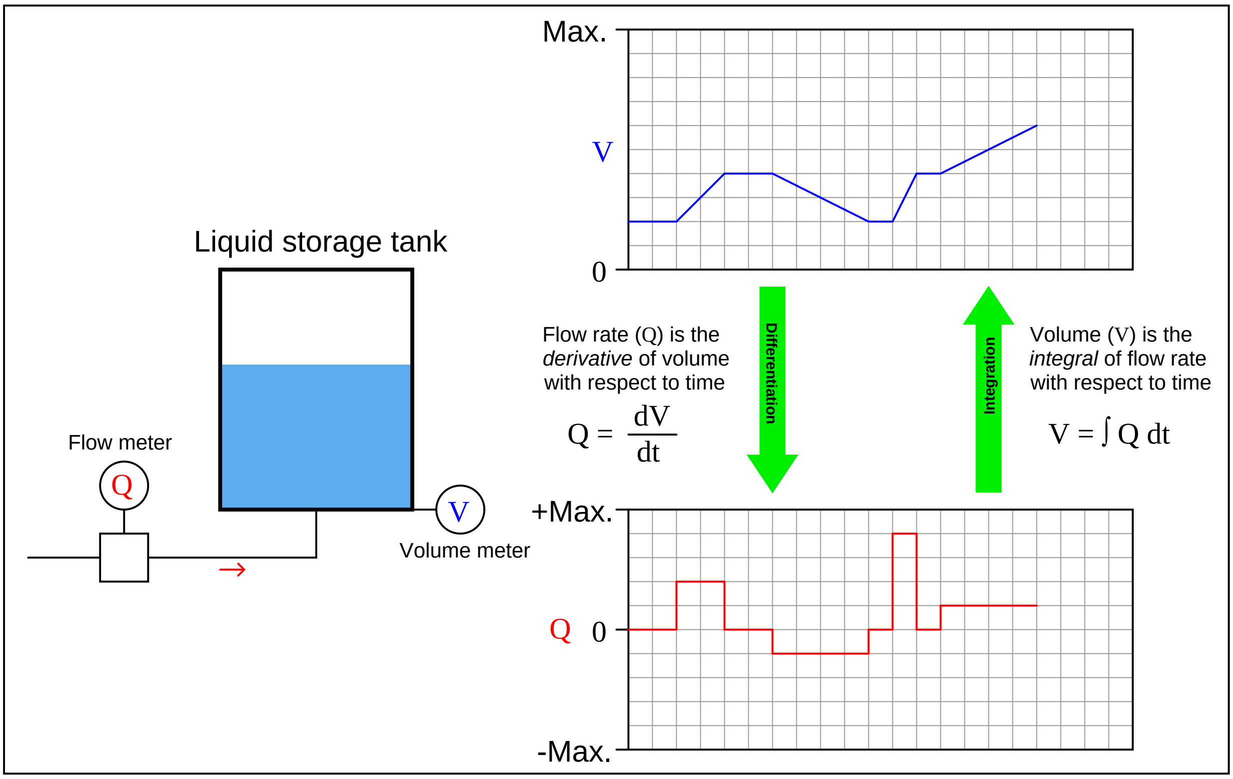
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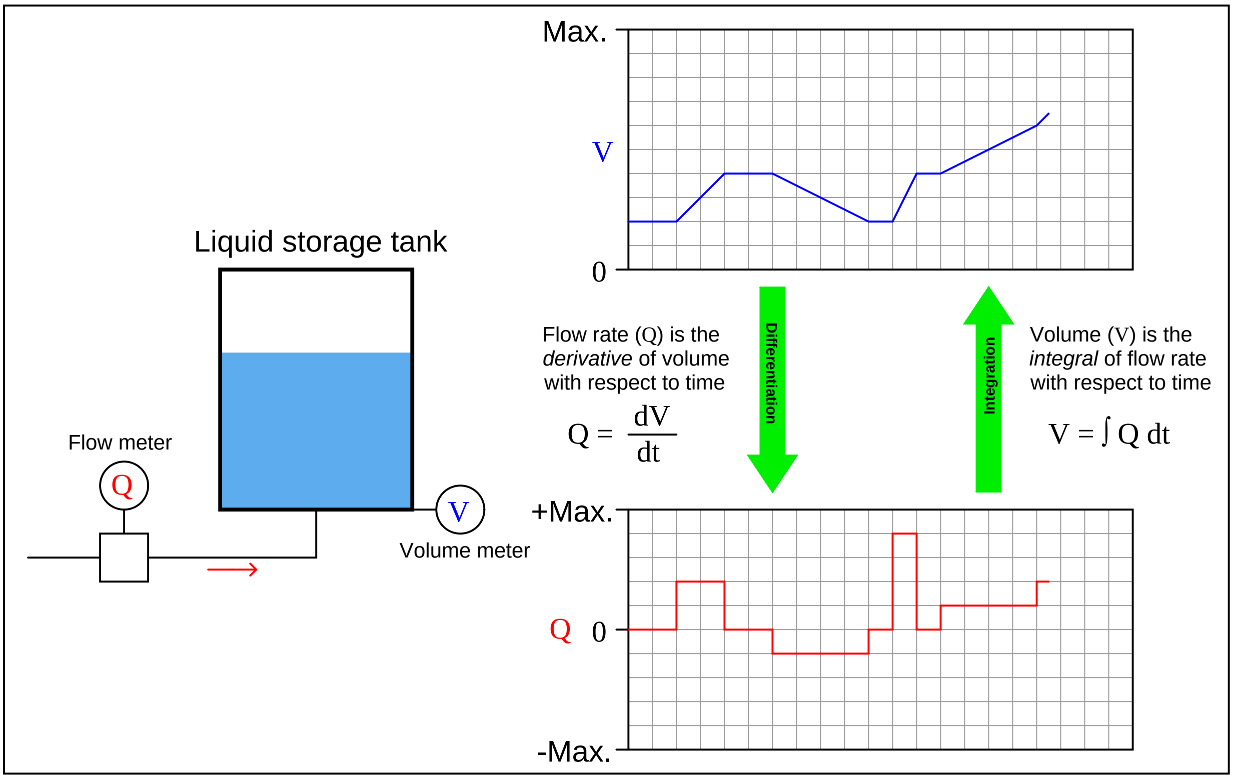
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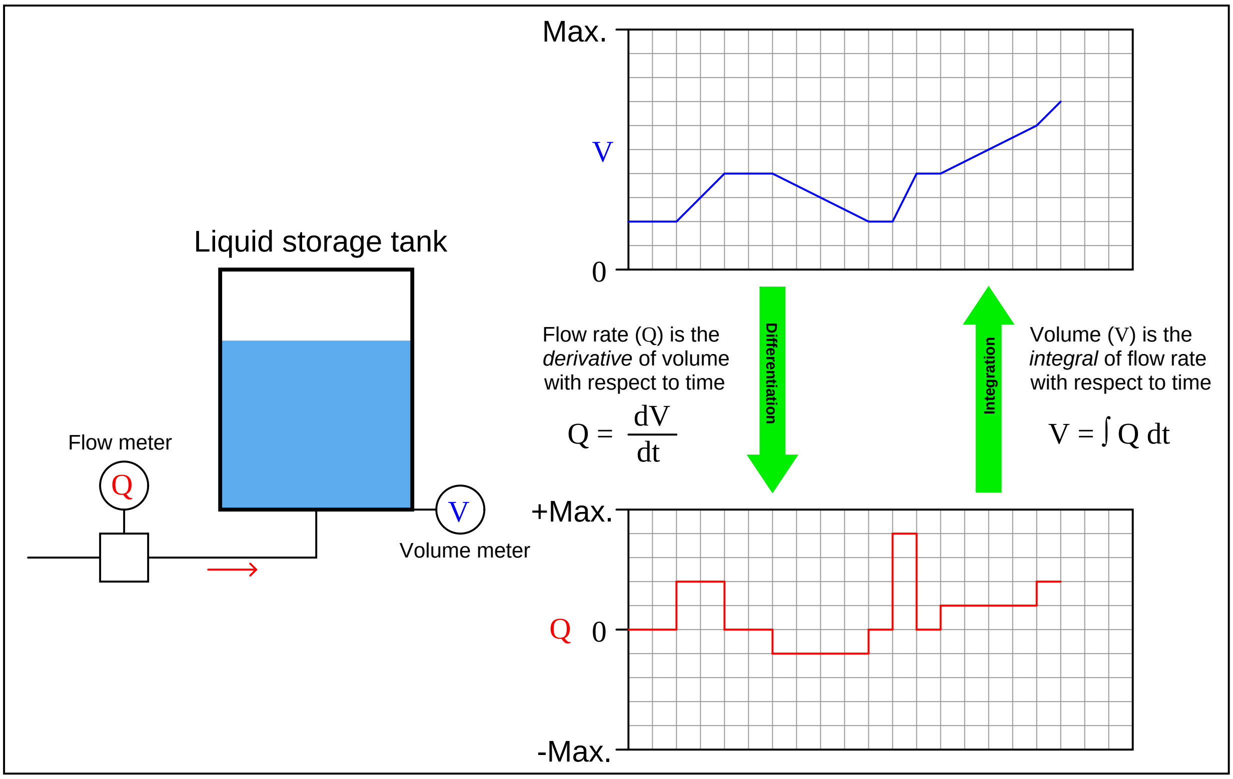
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Volume (V) is the *integral* of flow rate with respect to time
$V = \int Q \, dt$
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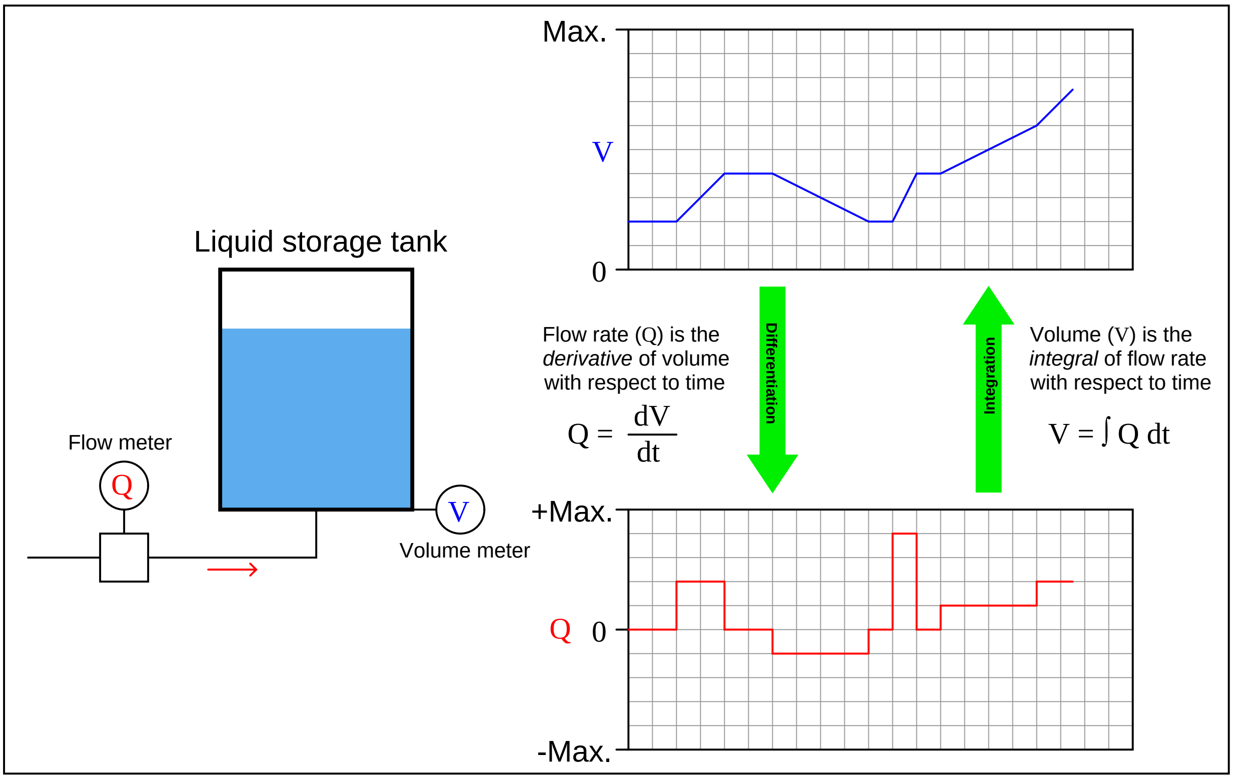Liquid storage tank
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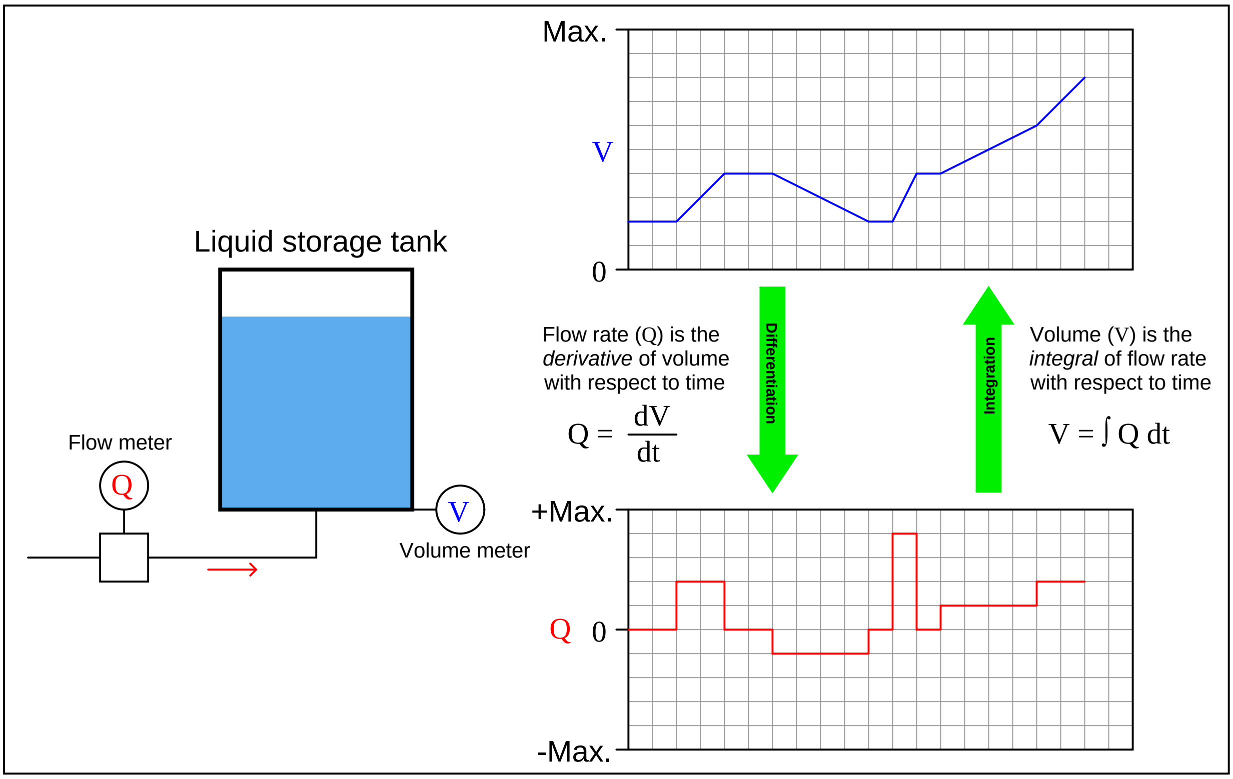
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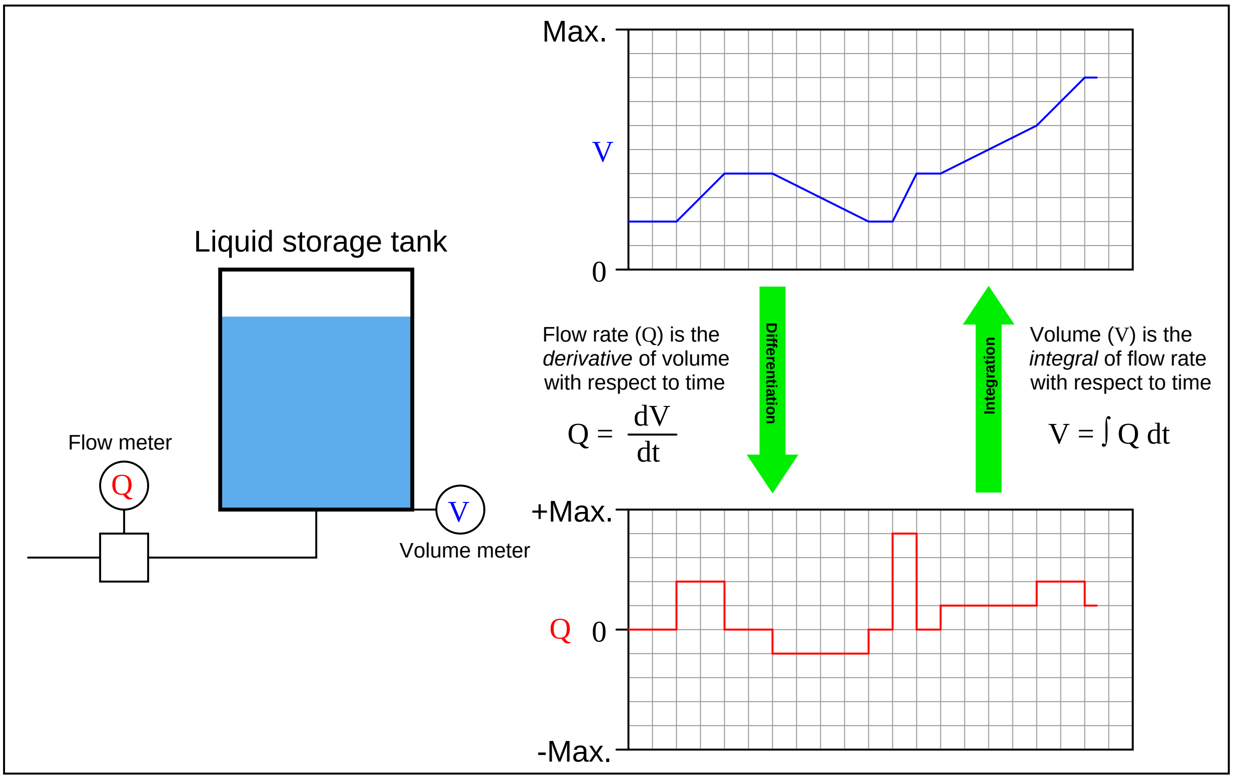
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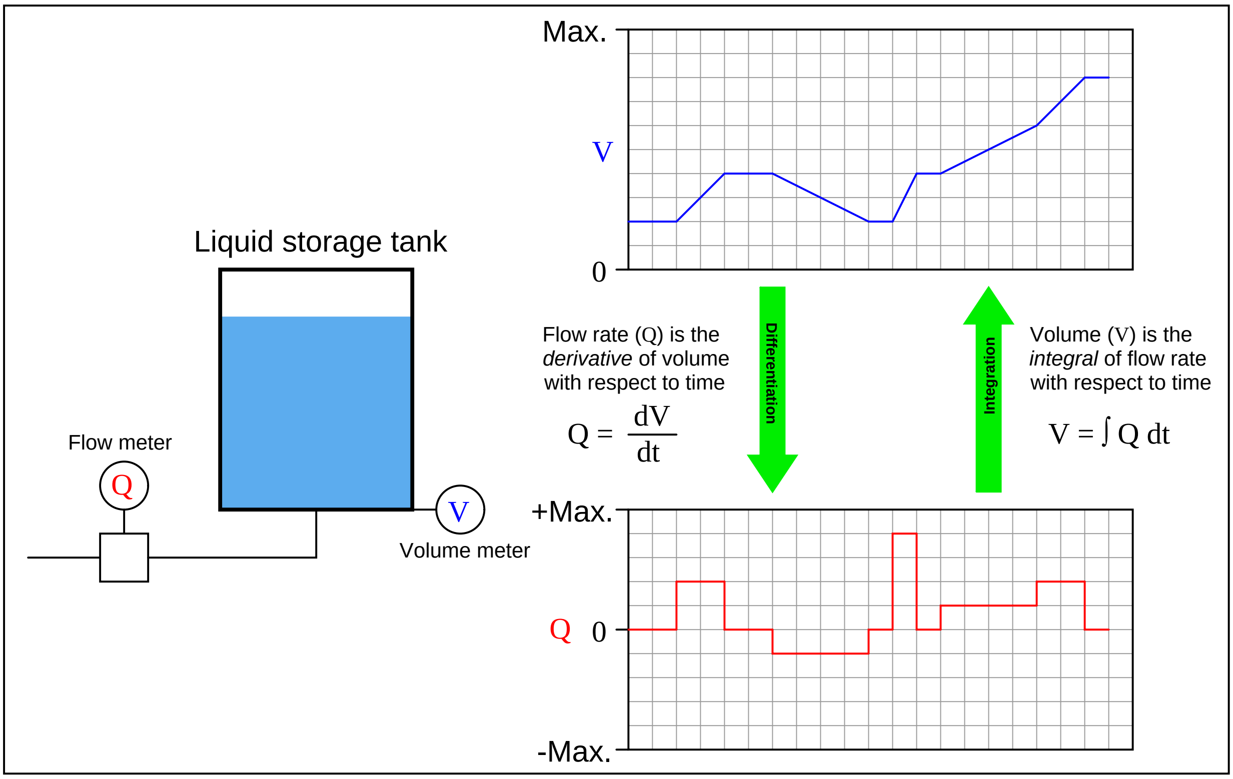
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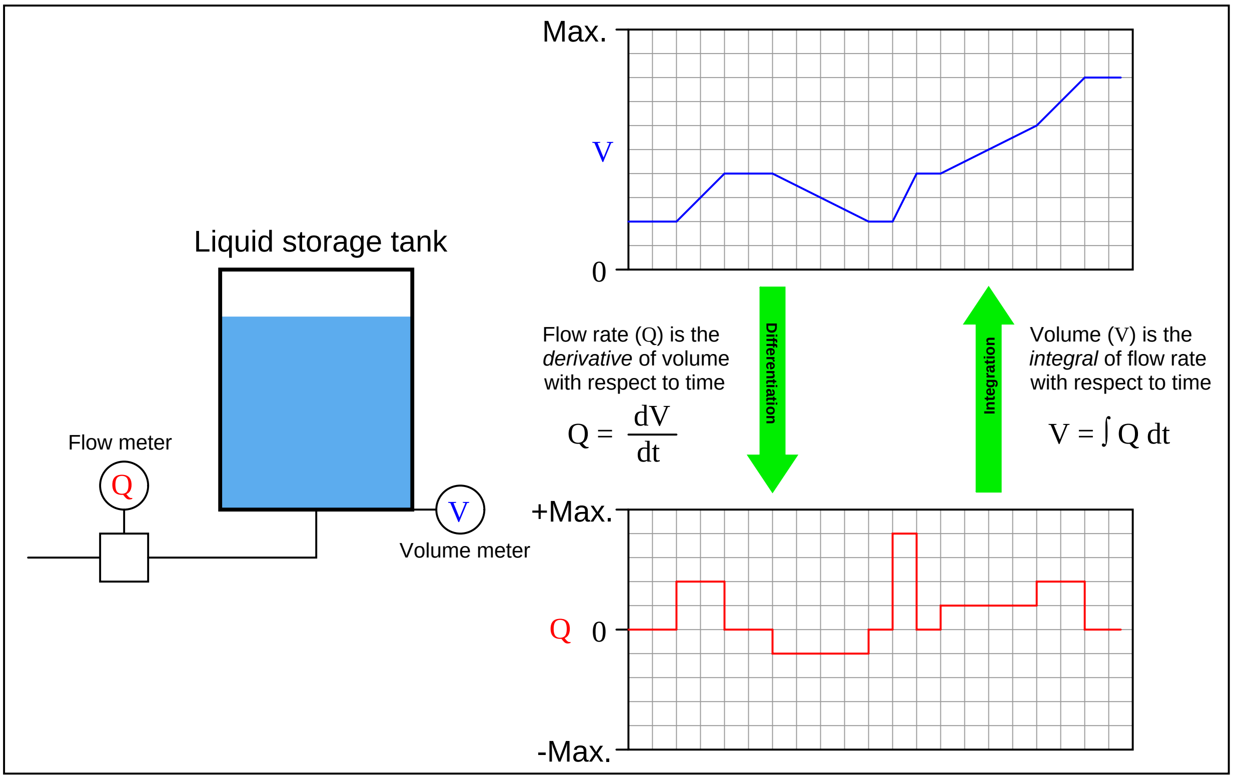
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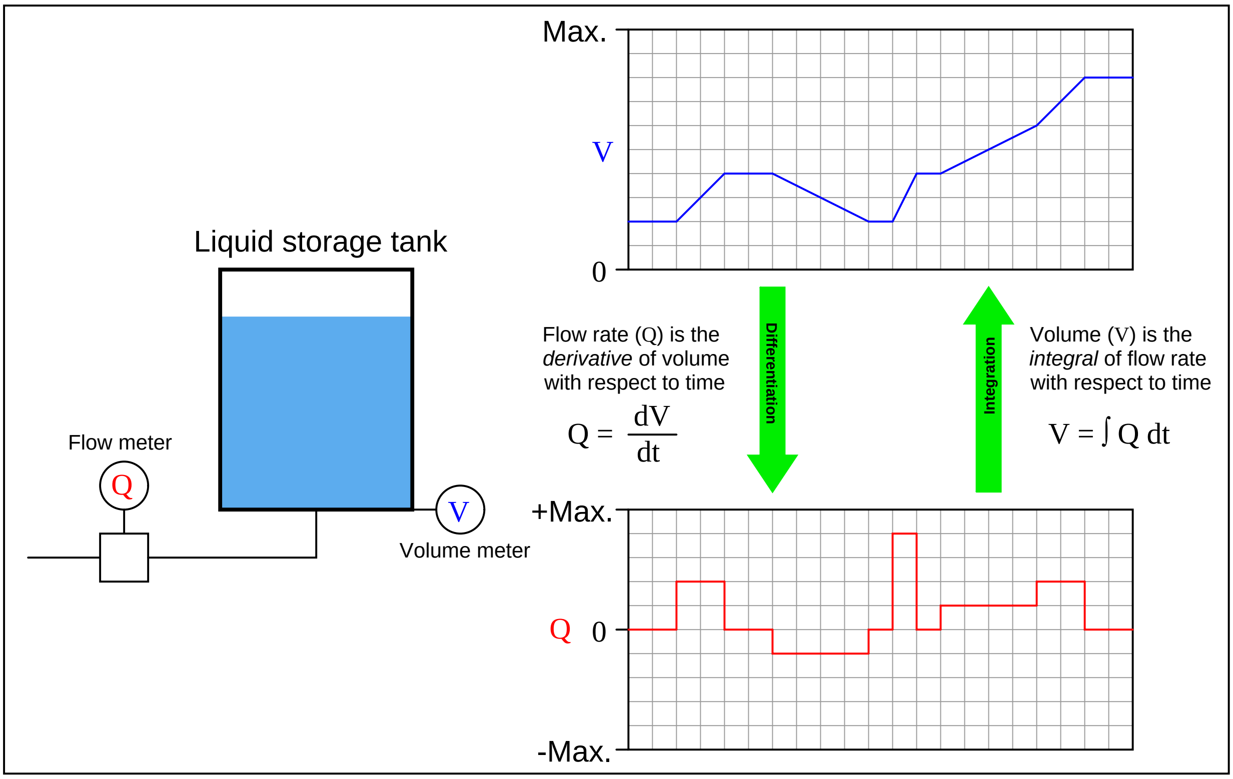
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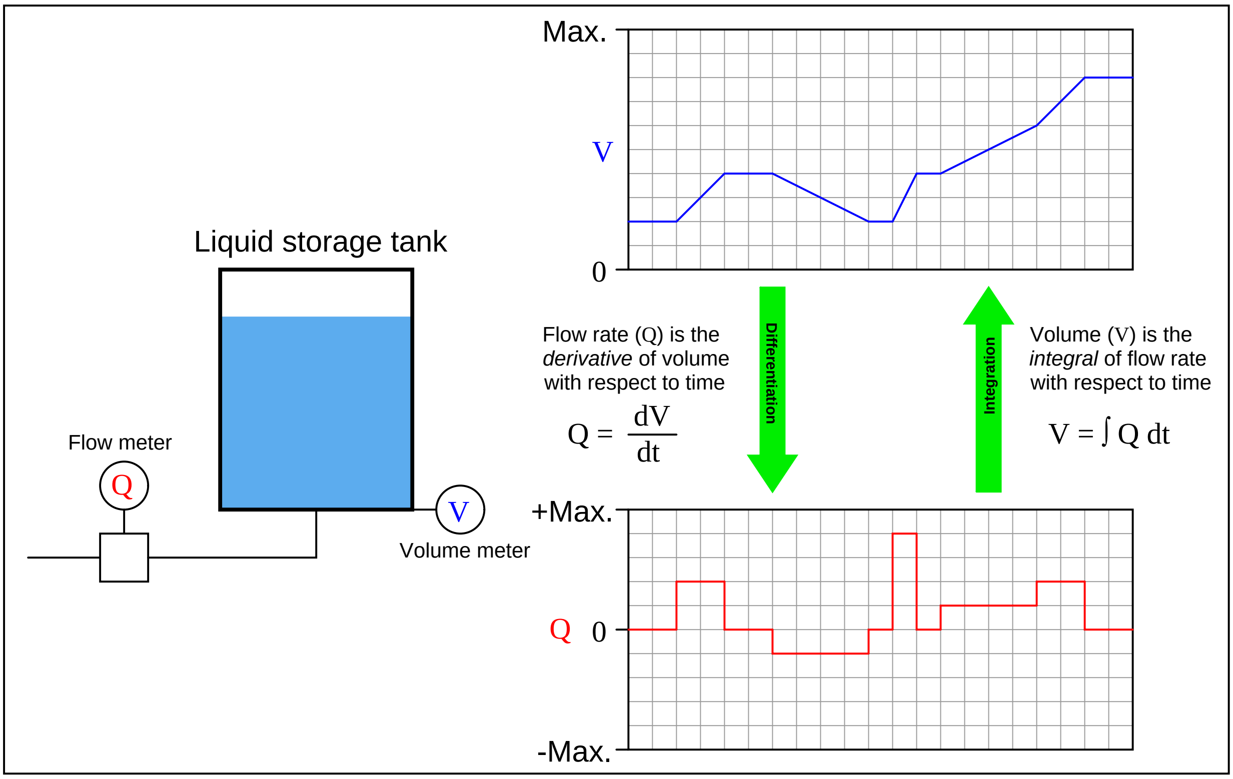
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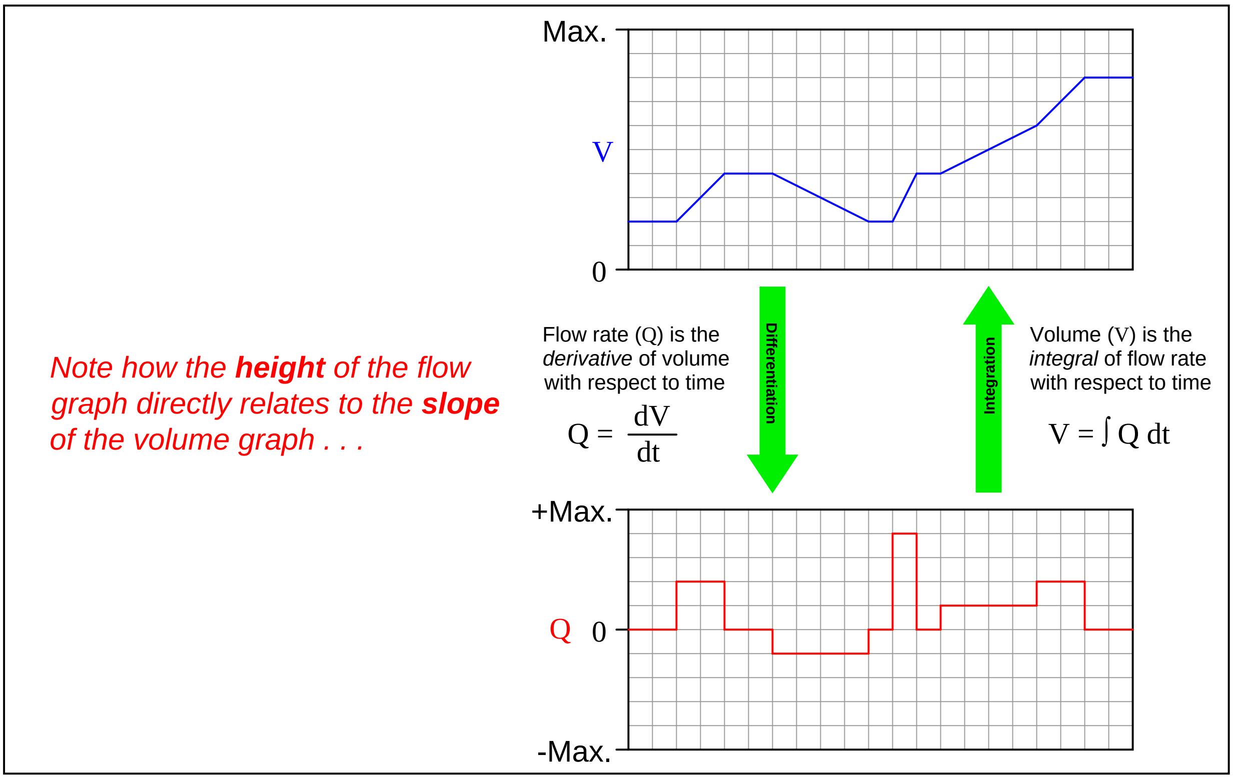

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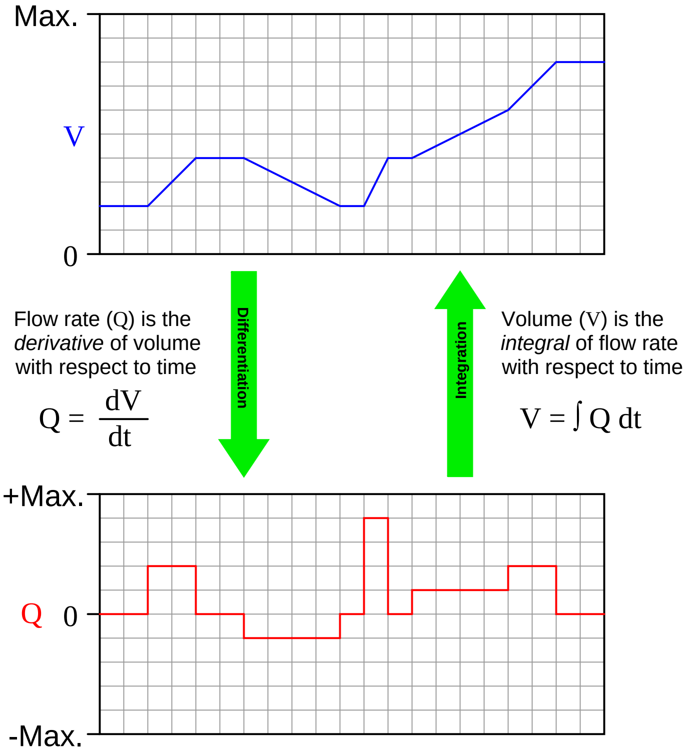

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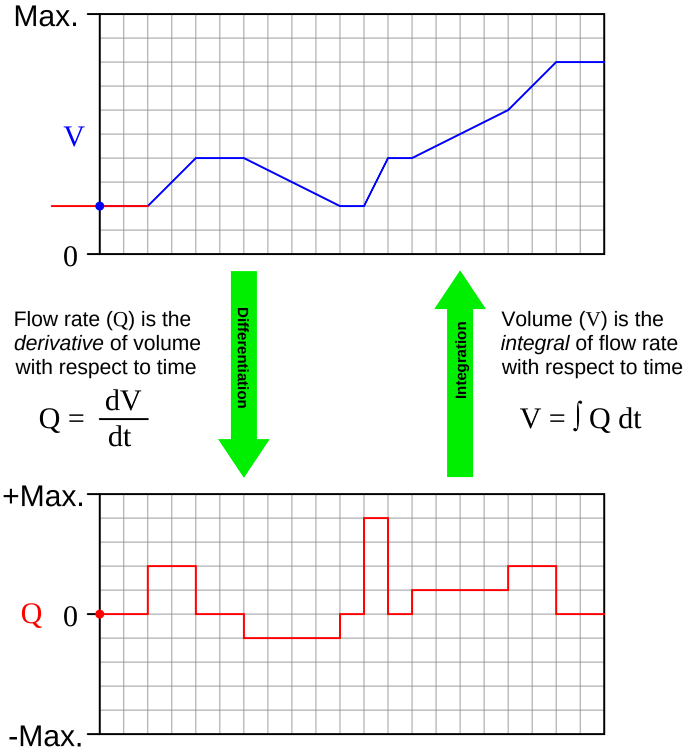

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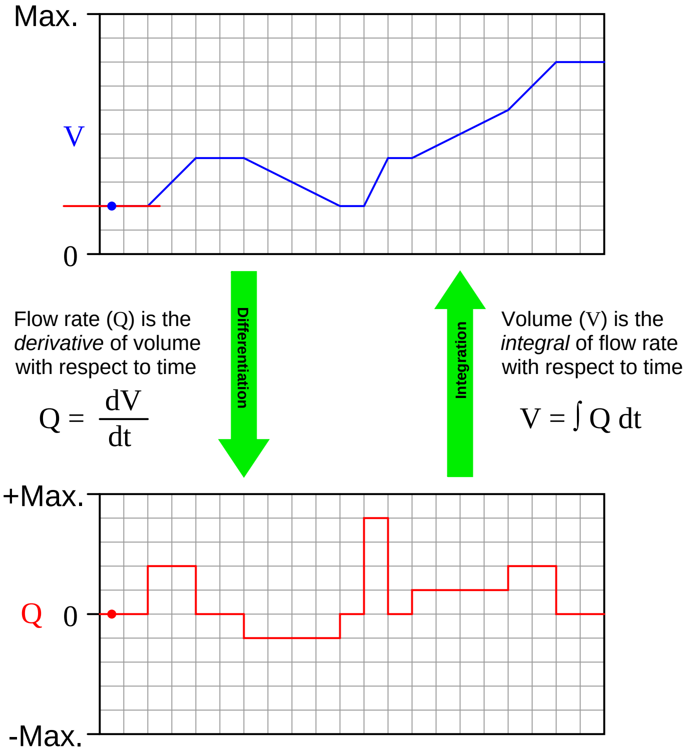

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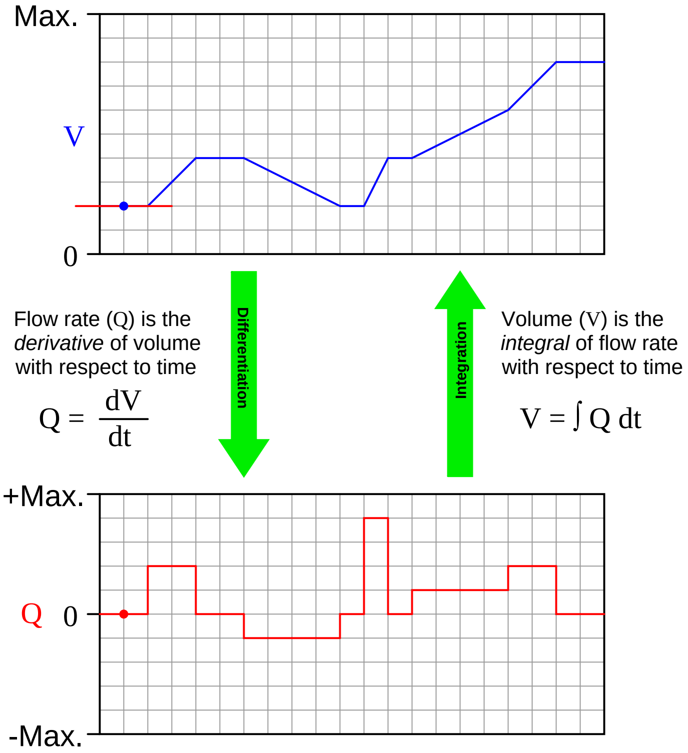

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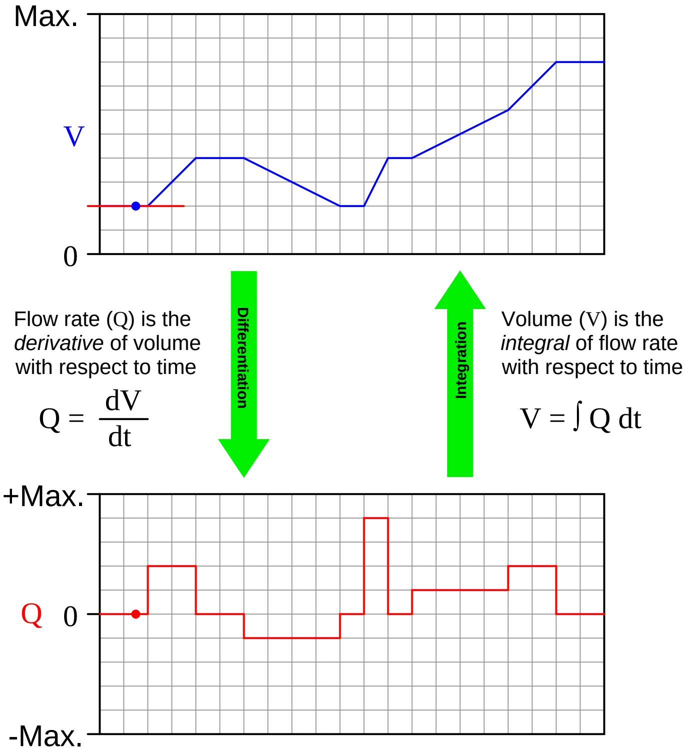

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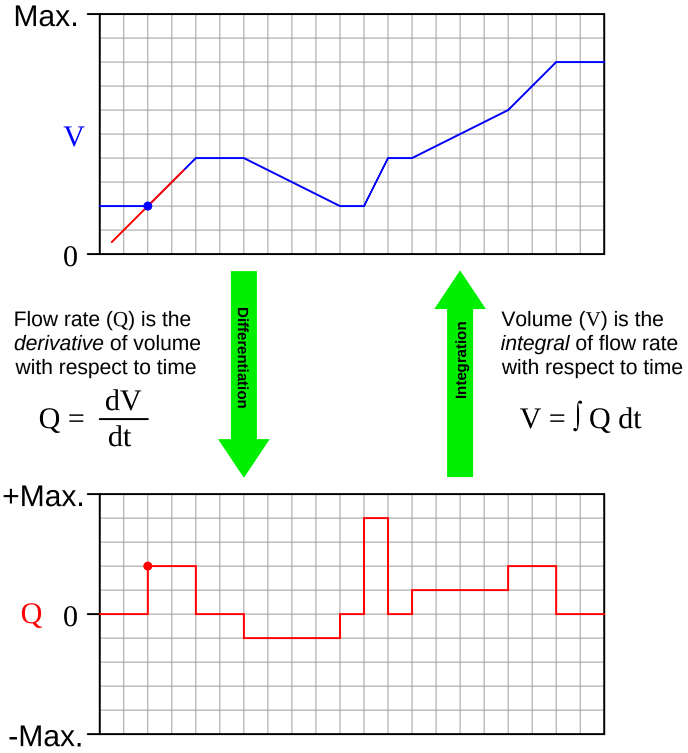

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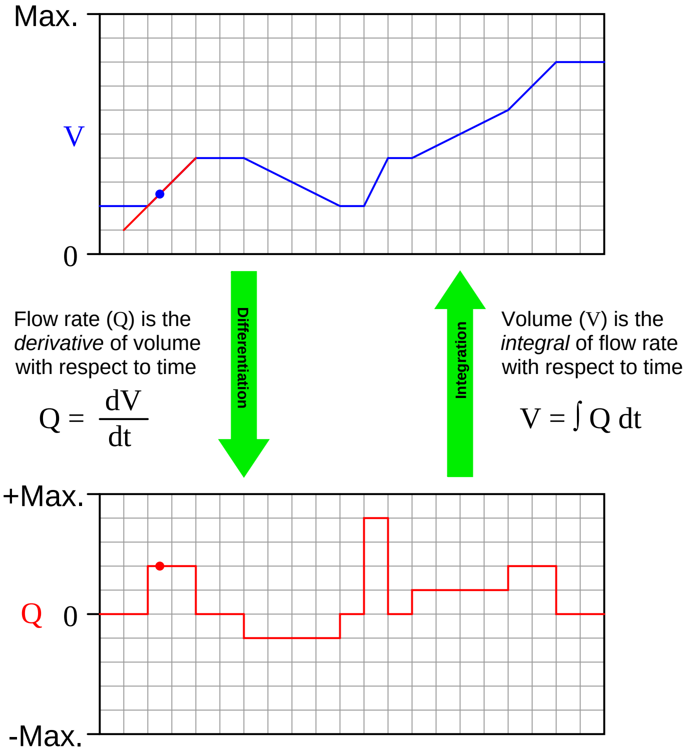

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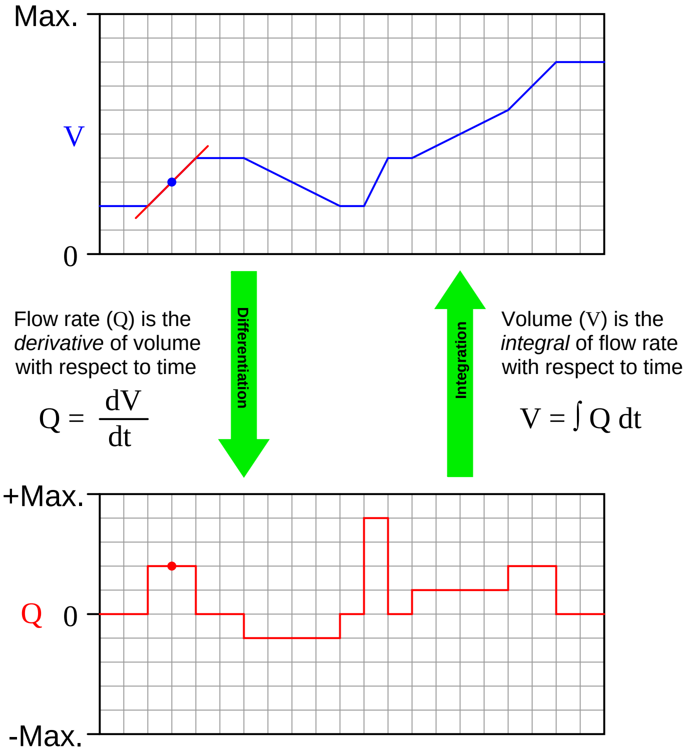

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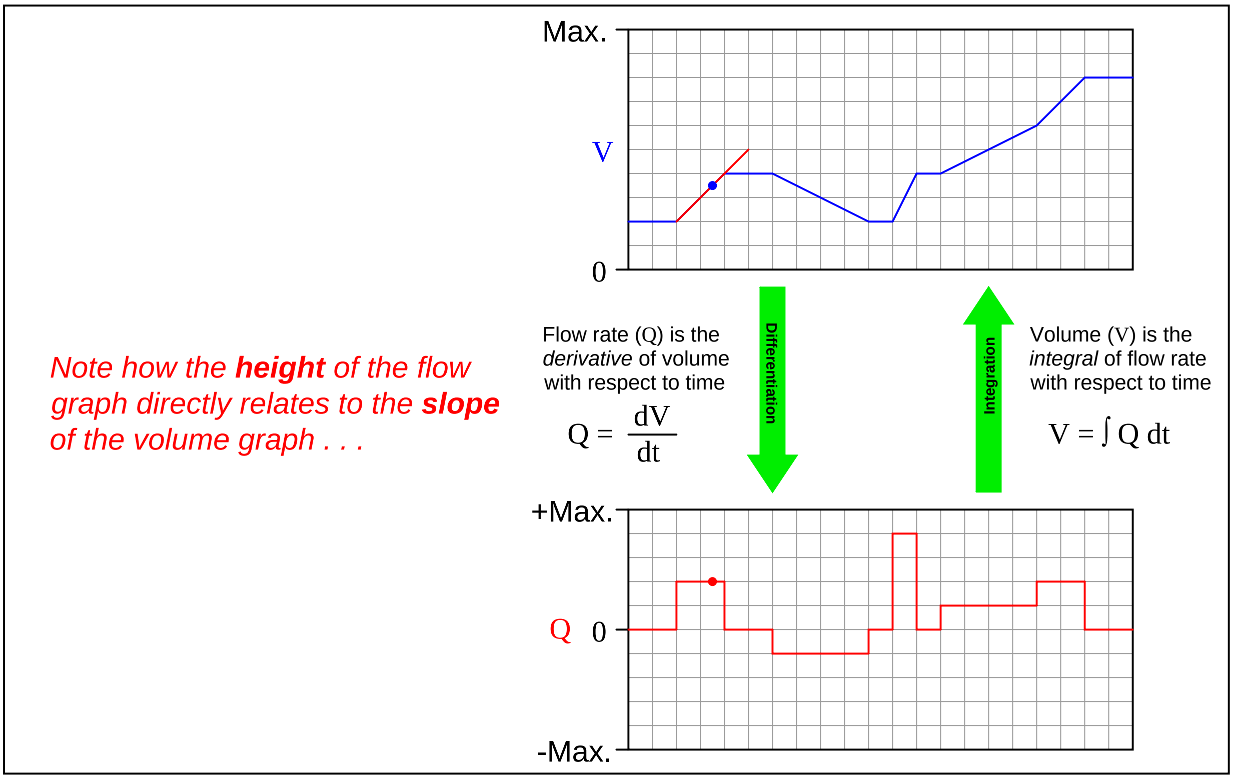
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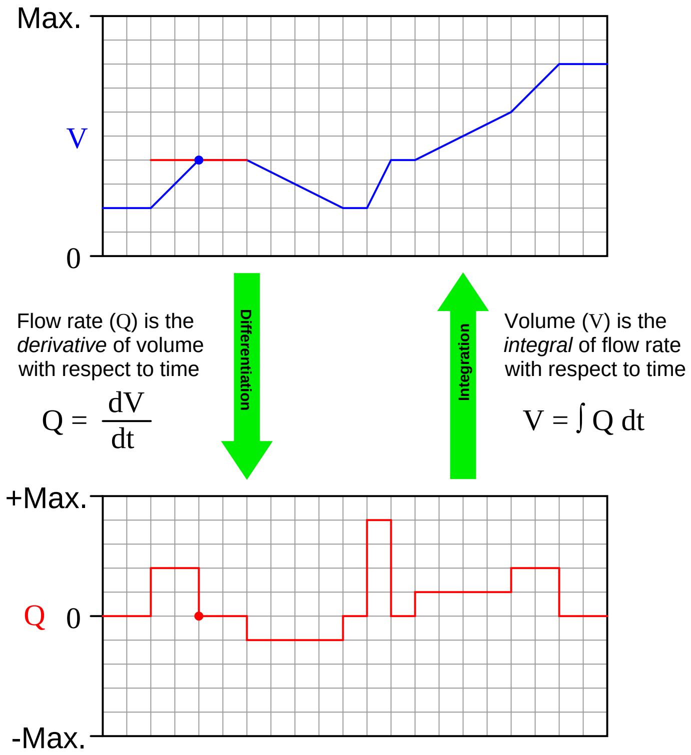

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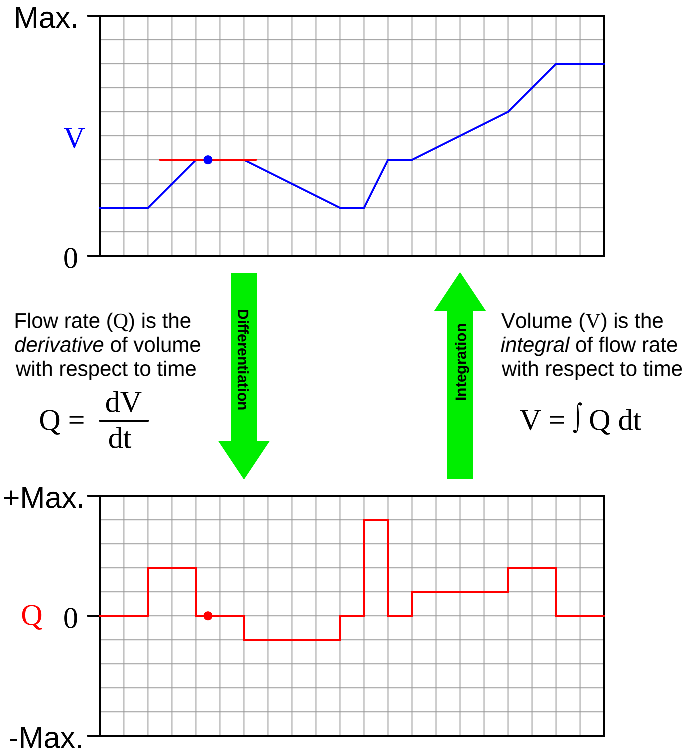

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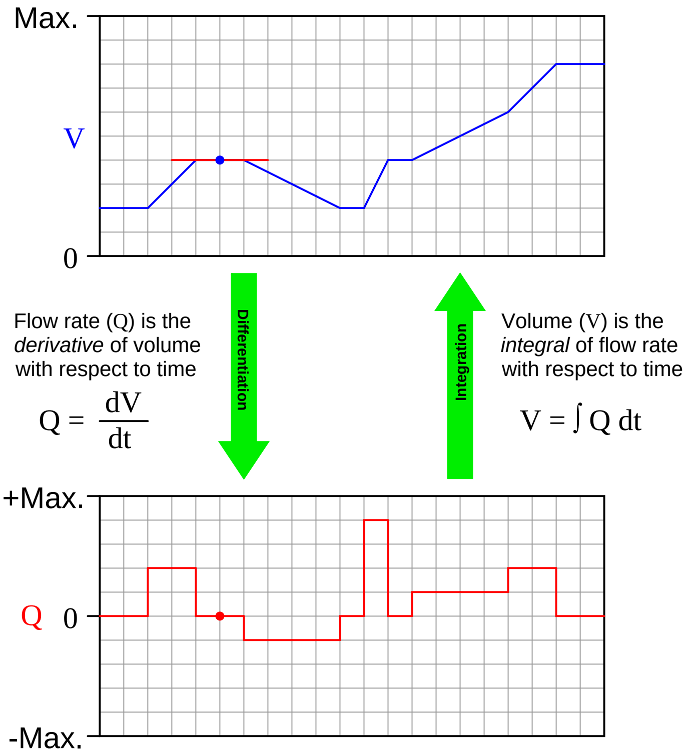

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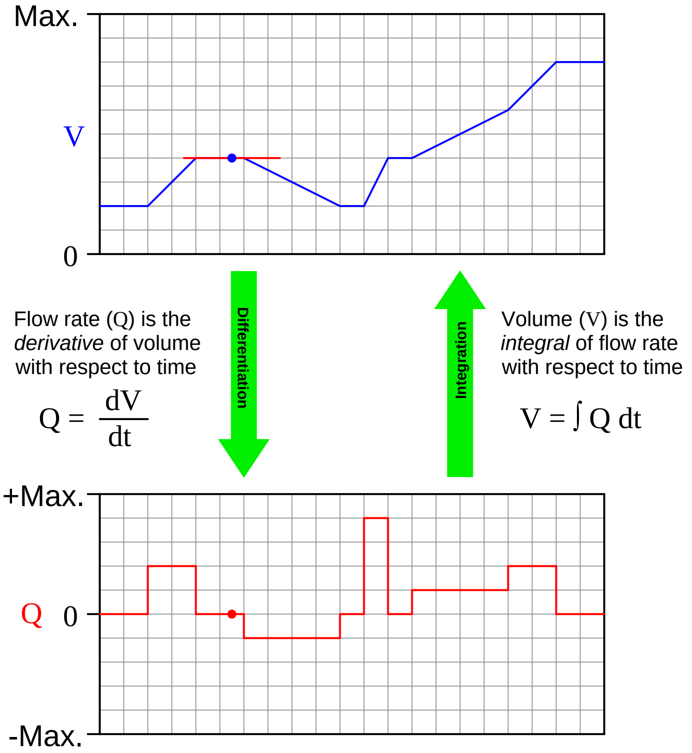

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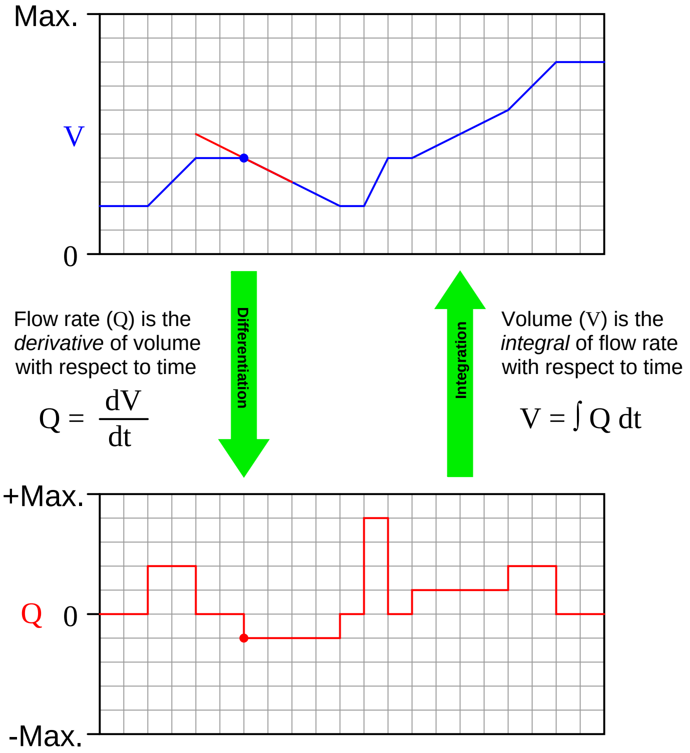

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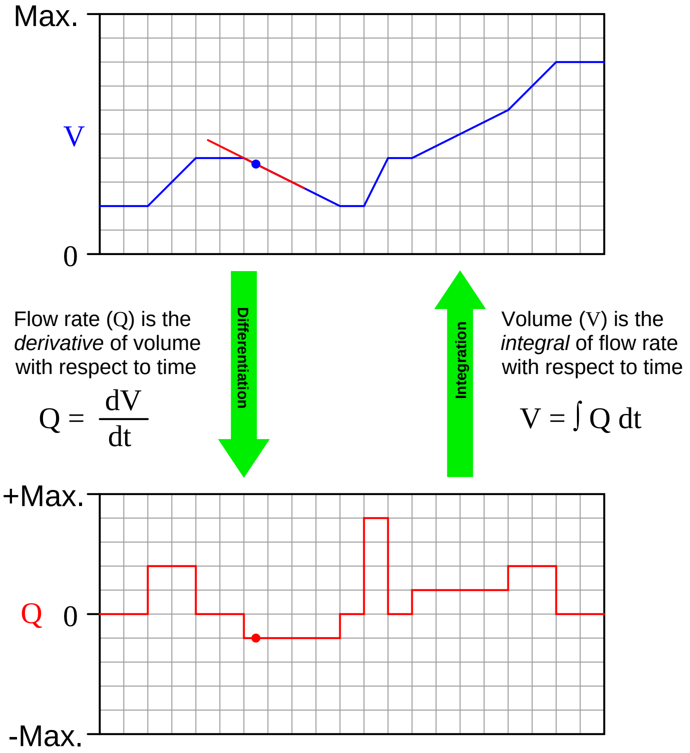

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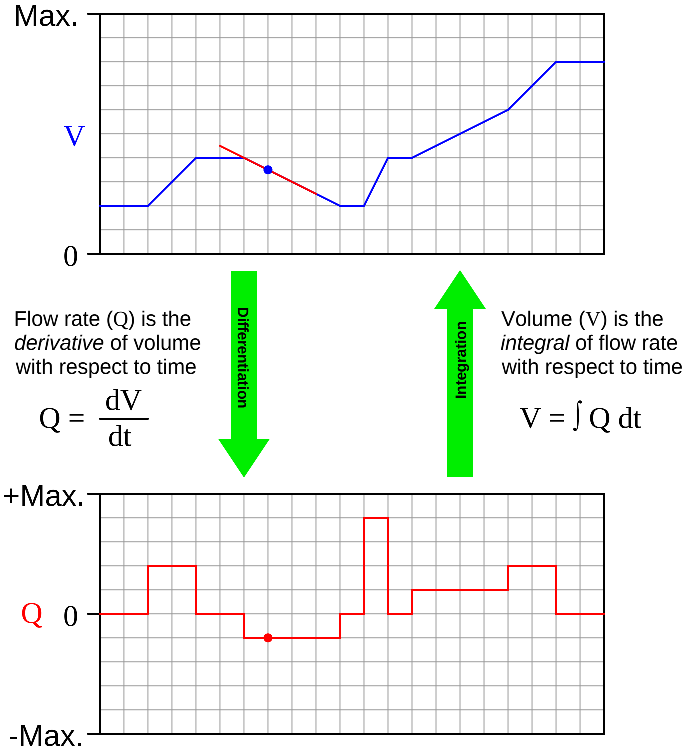

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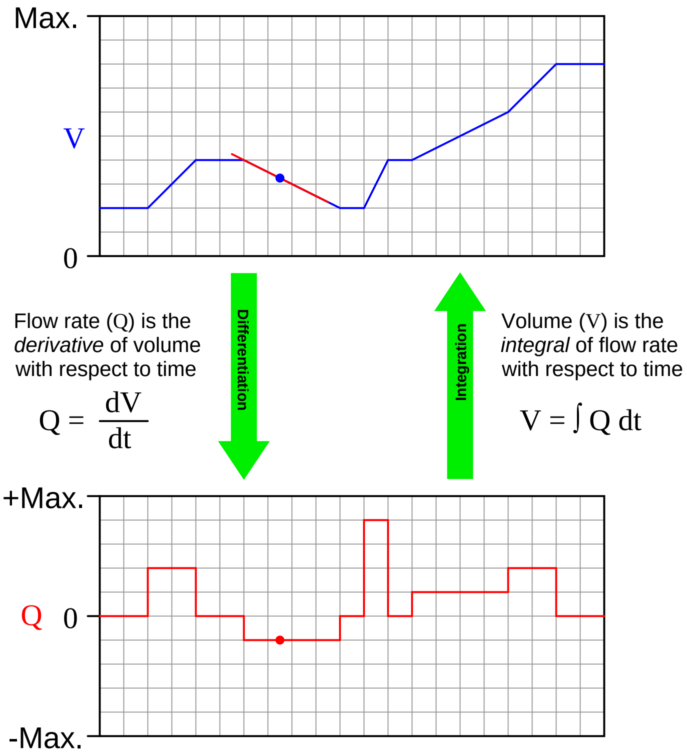

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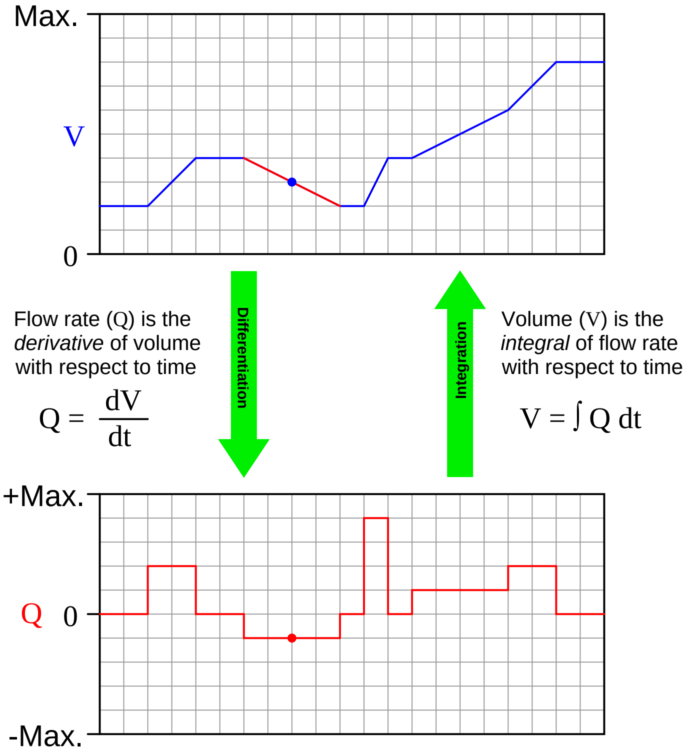

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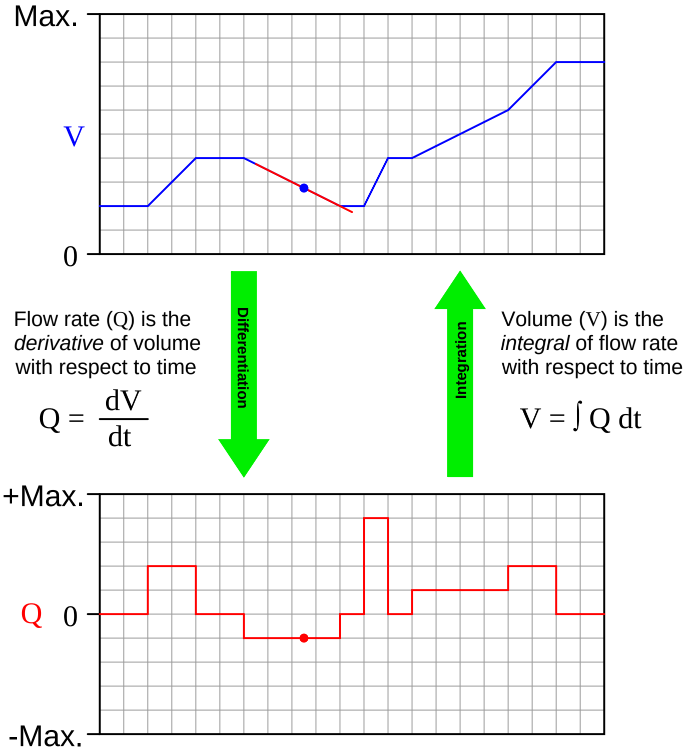

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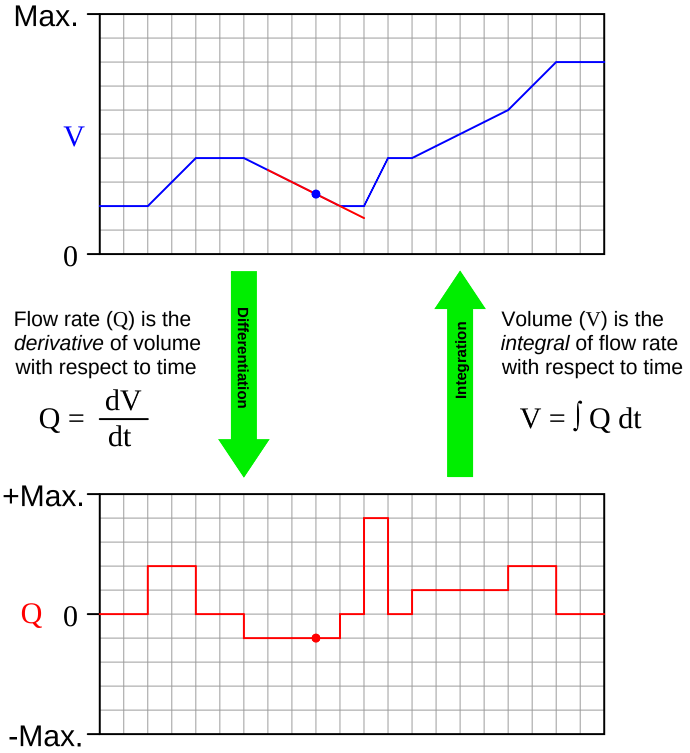

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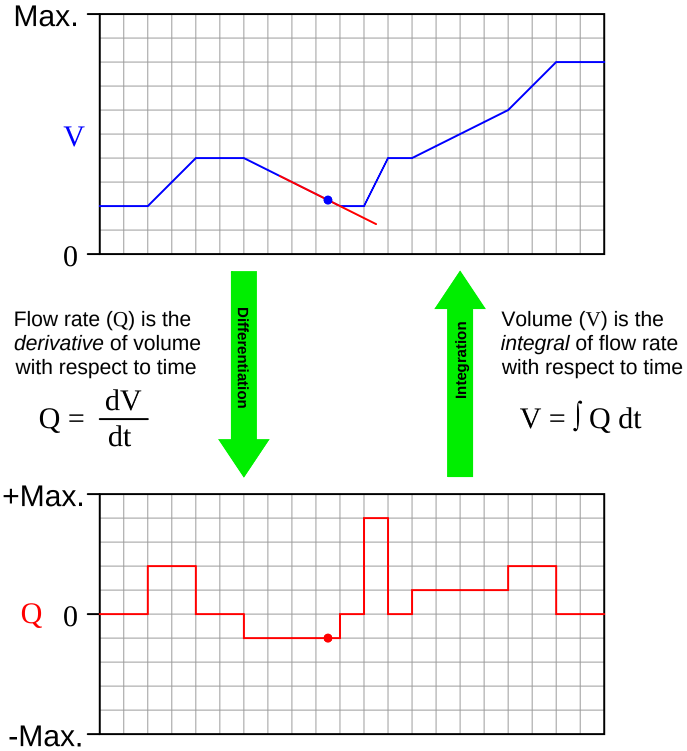

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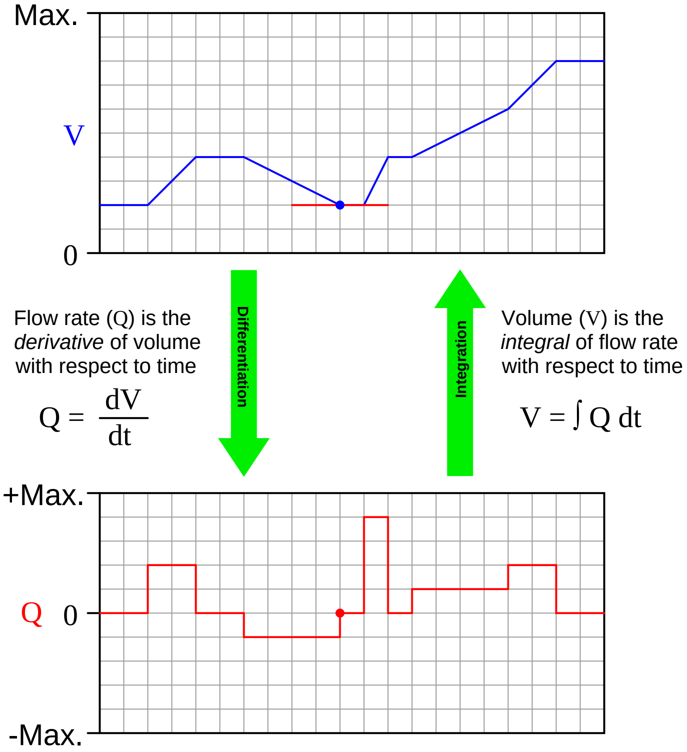

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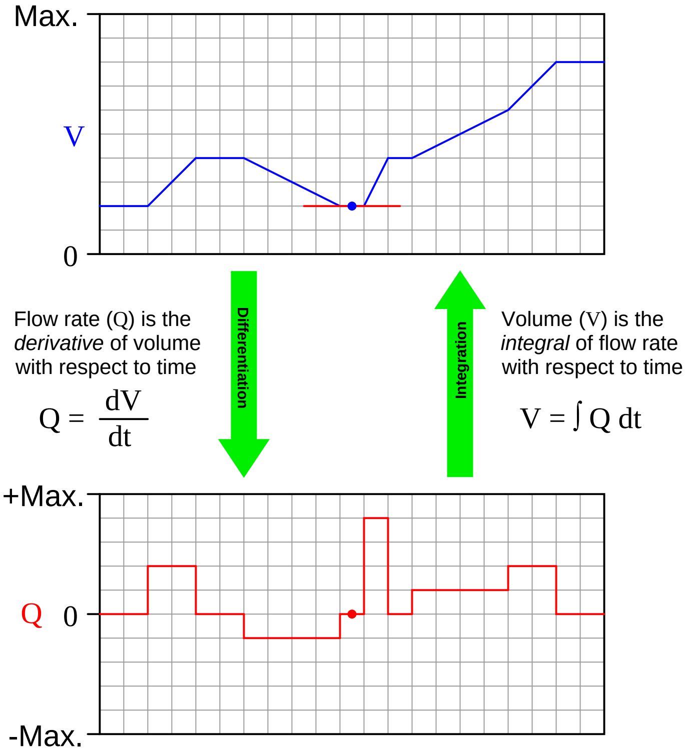

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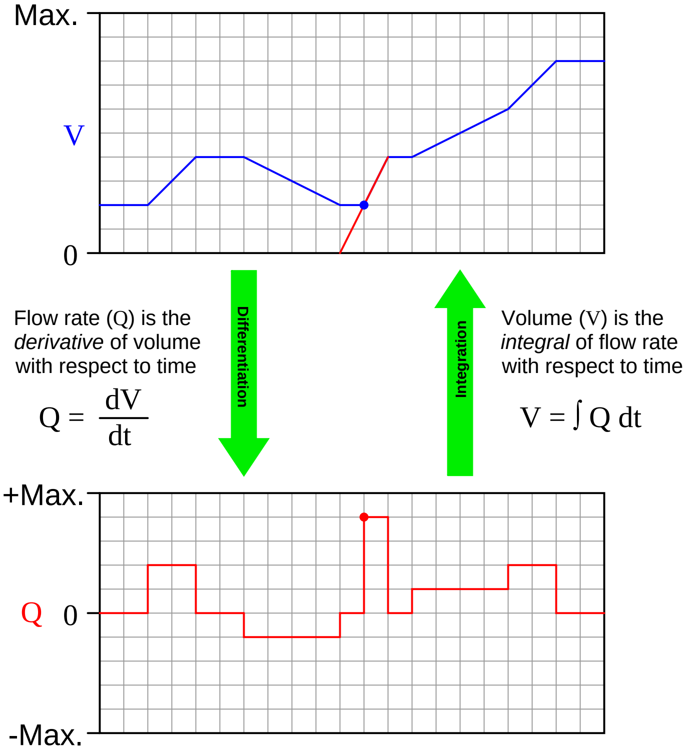

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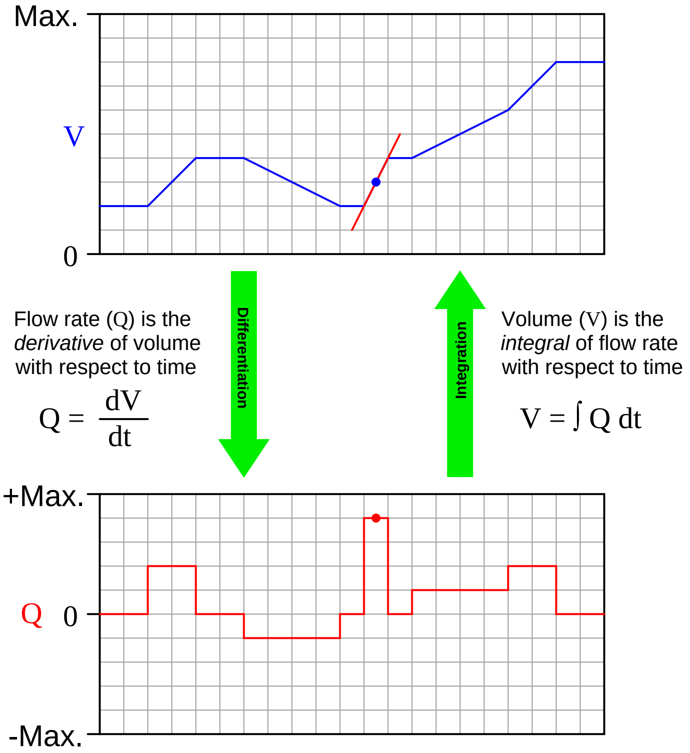

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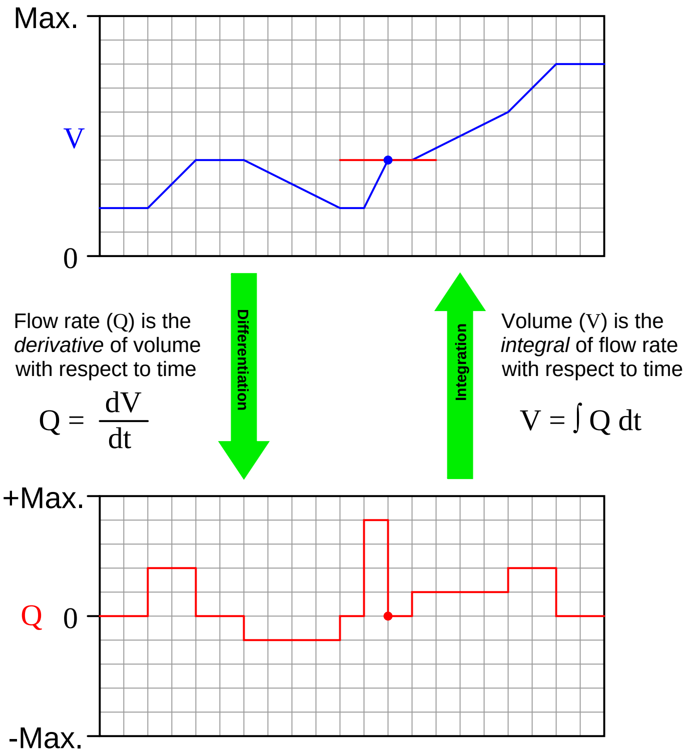

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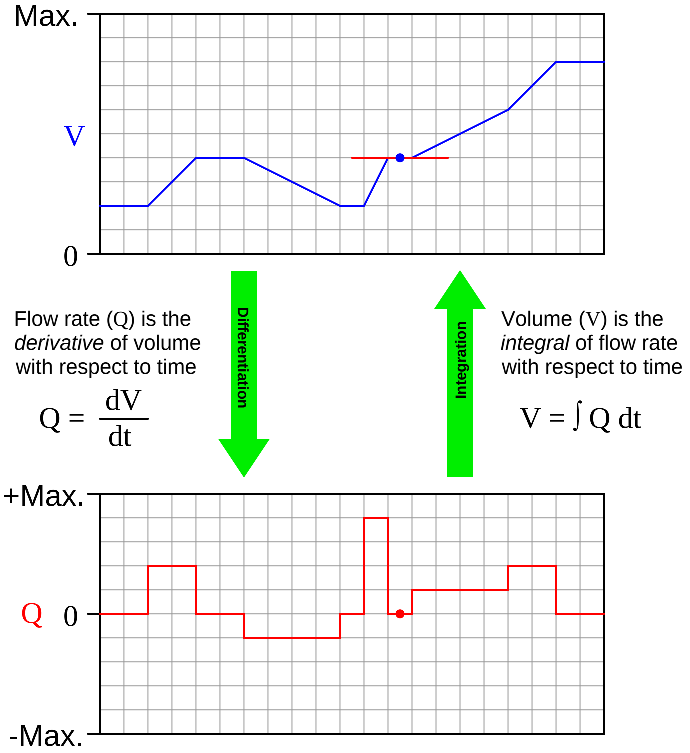

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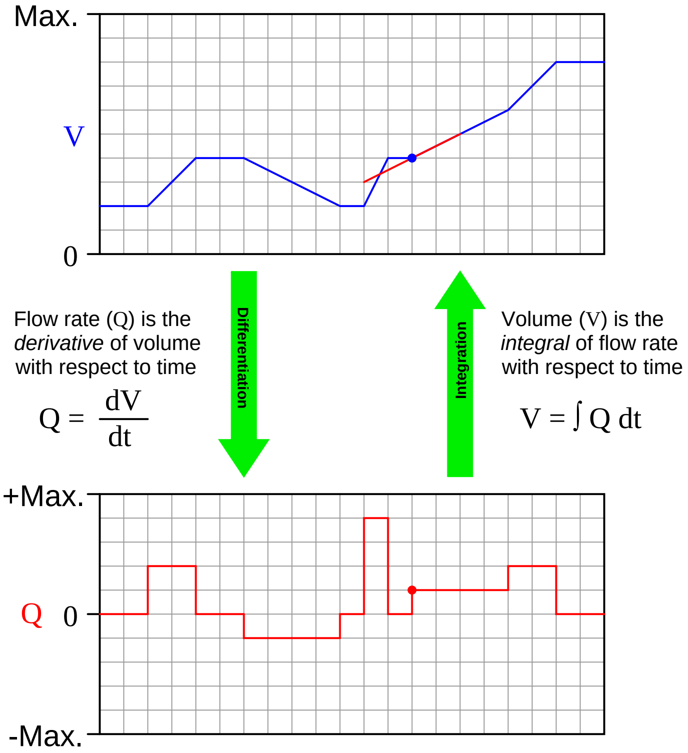

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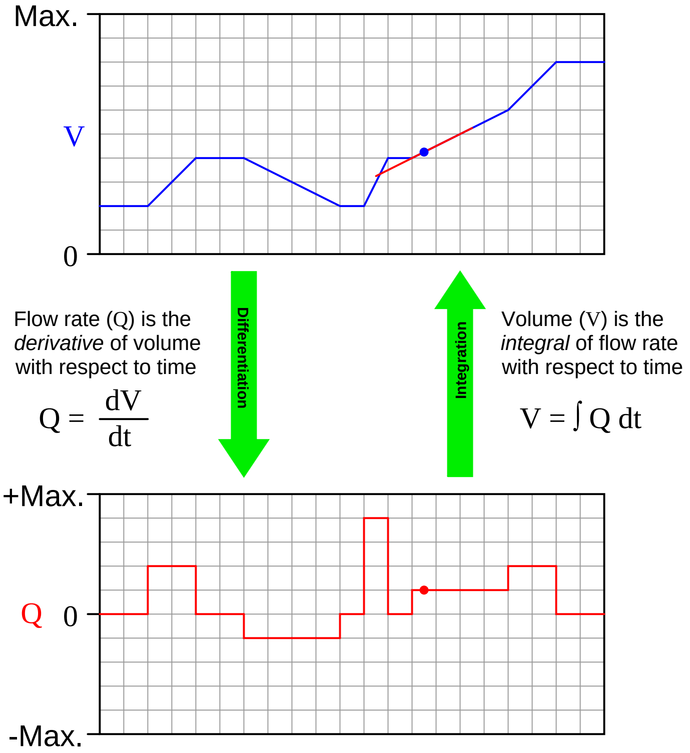

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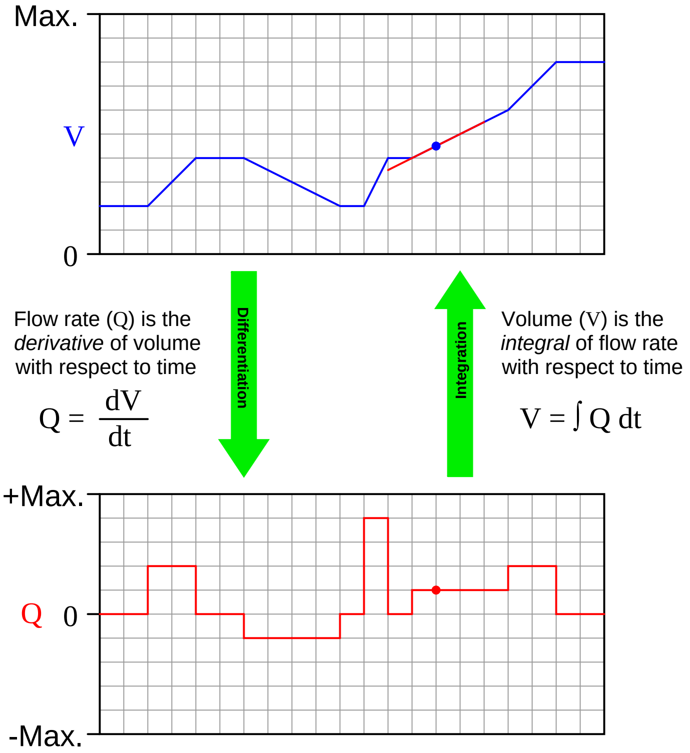

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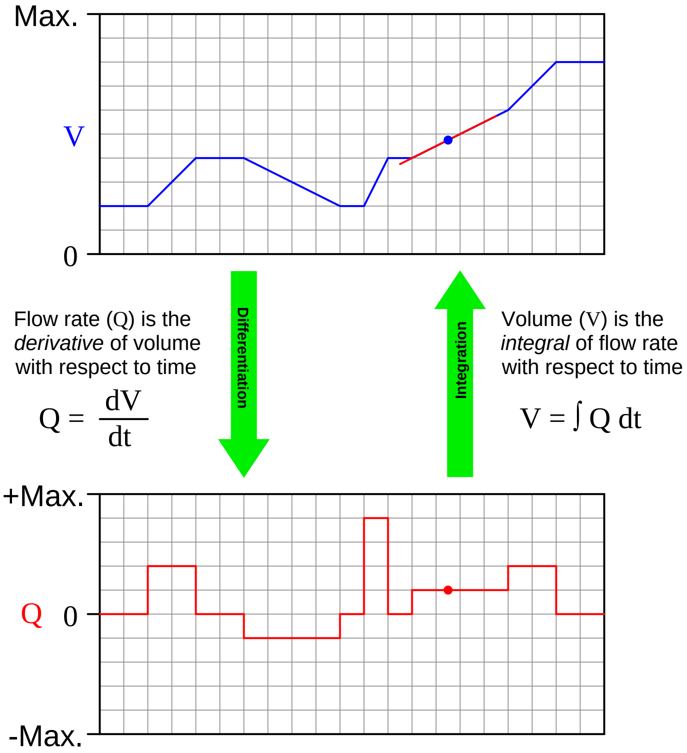

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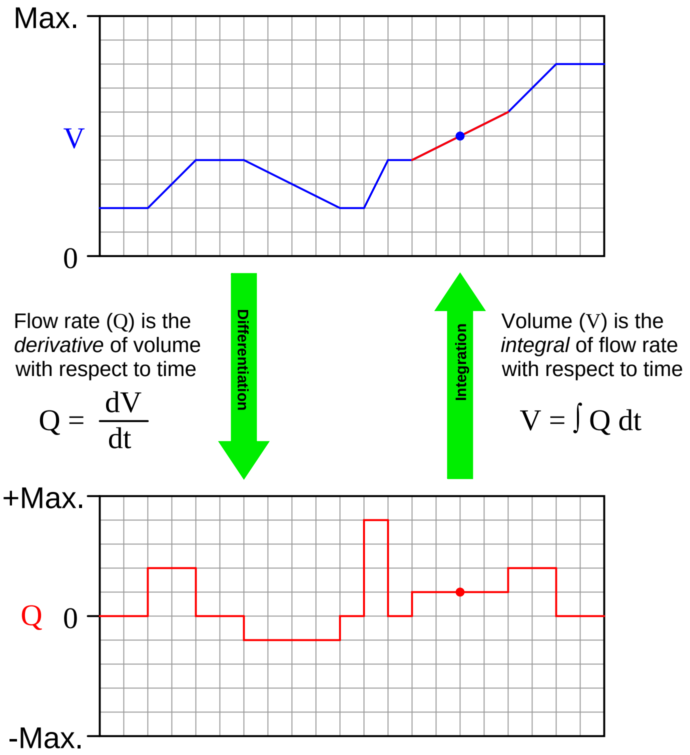

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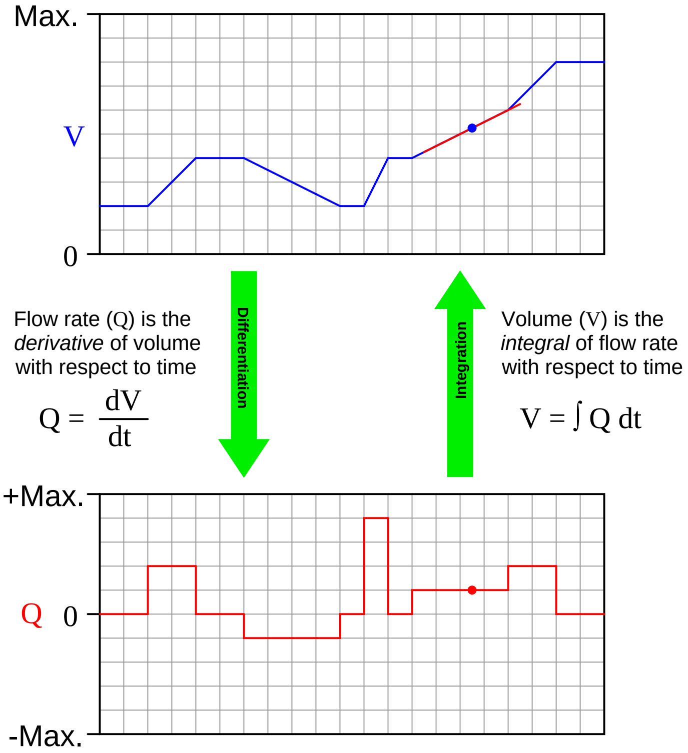

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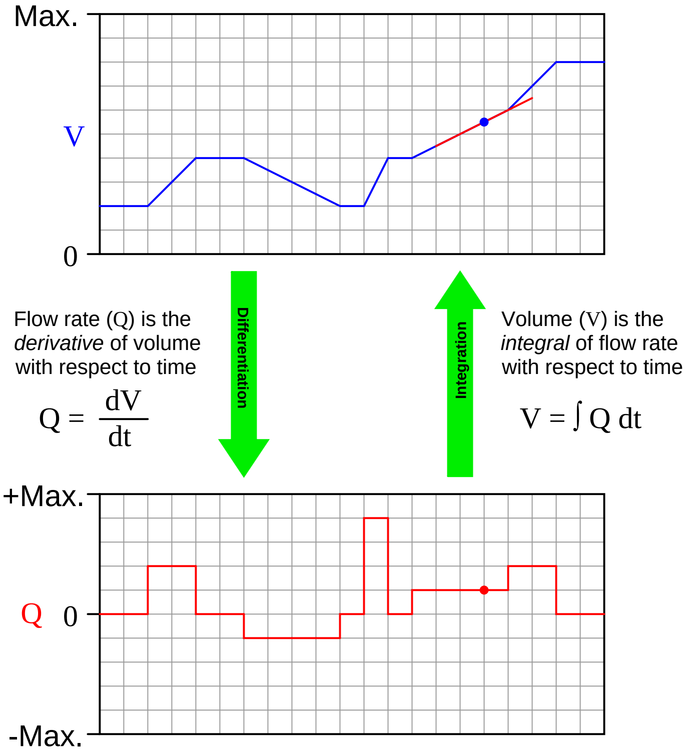

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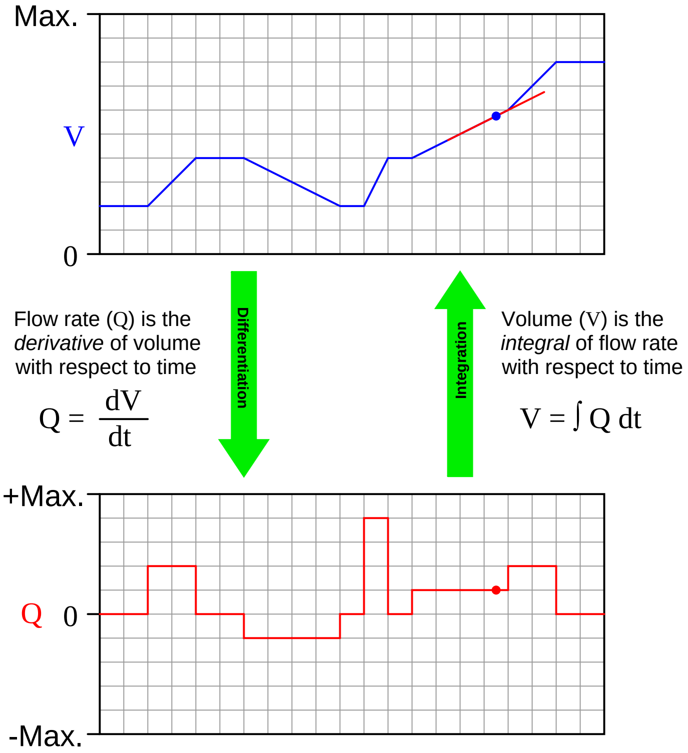

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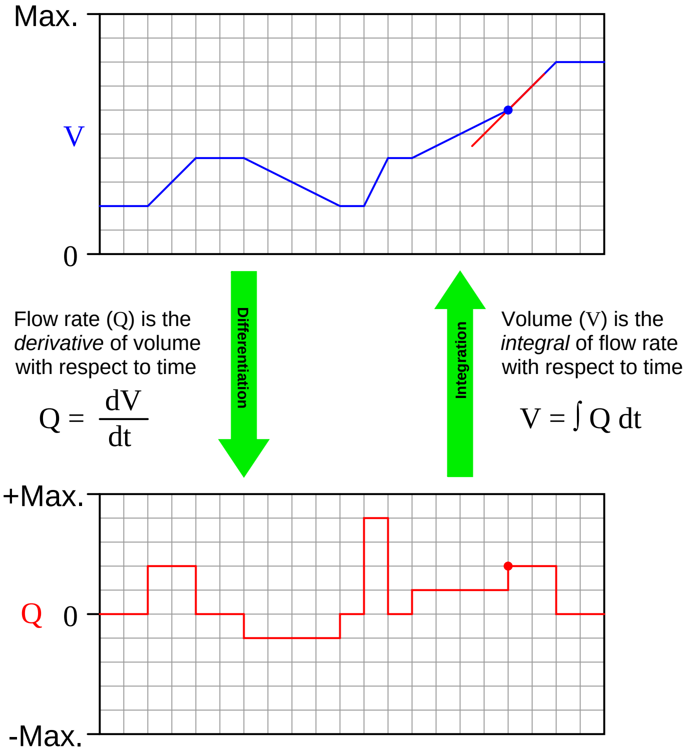

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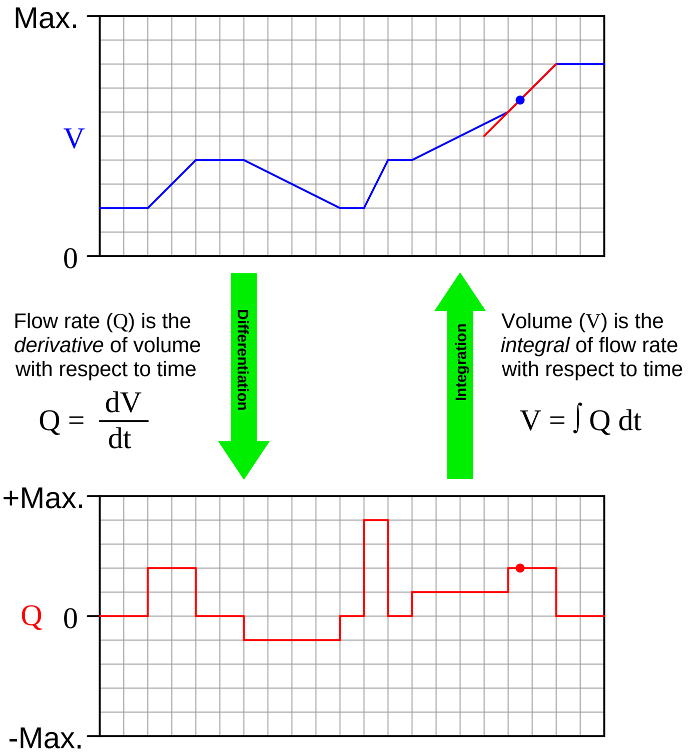

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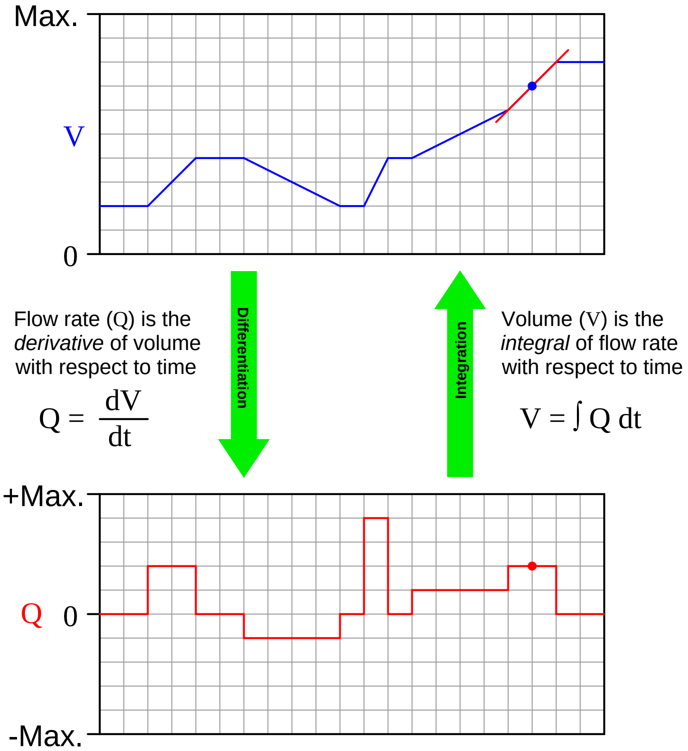

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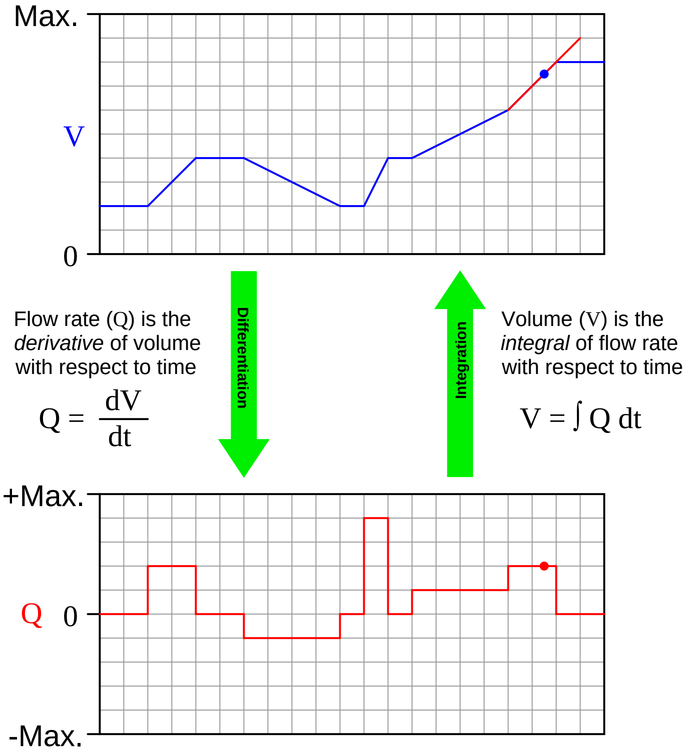

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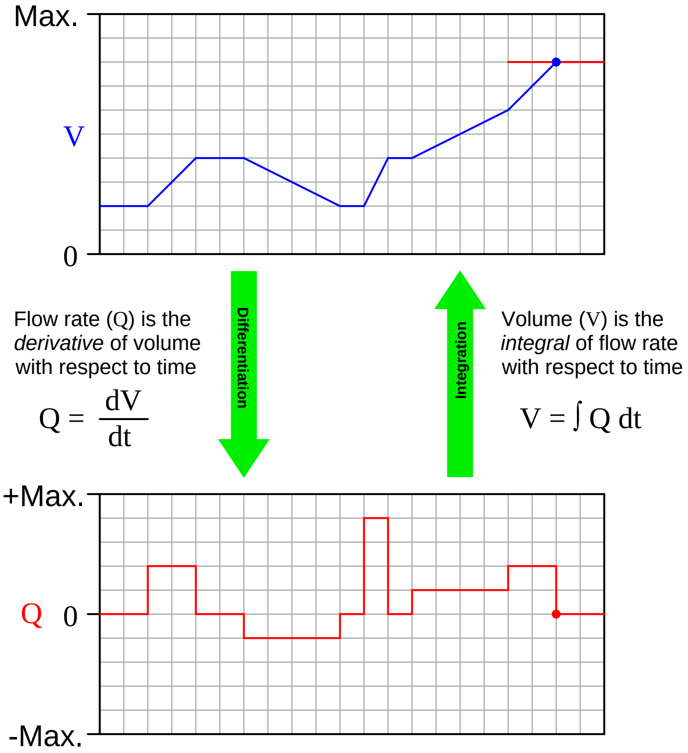

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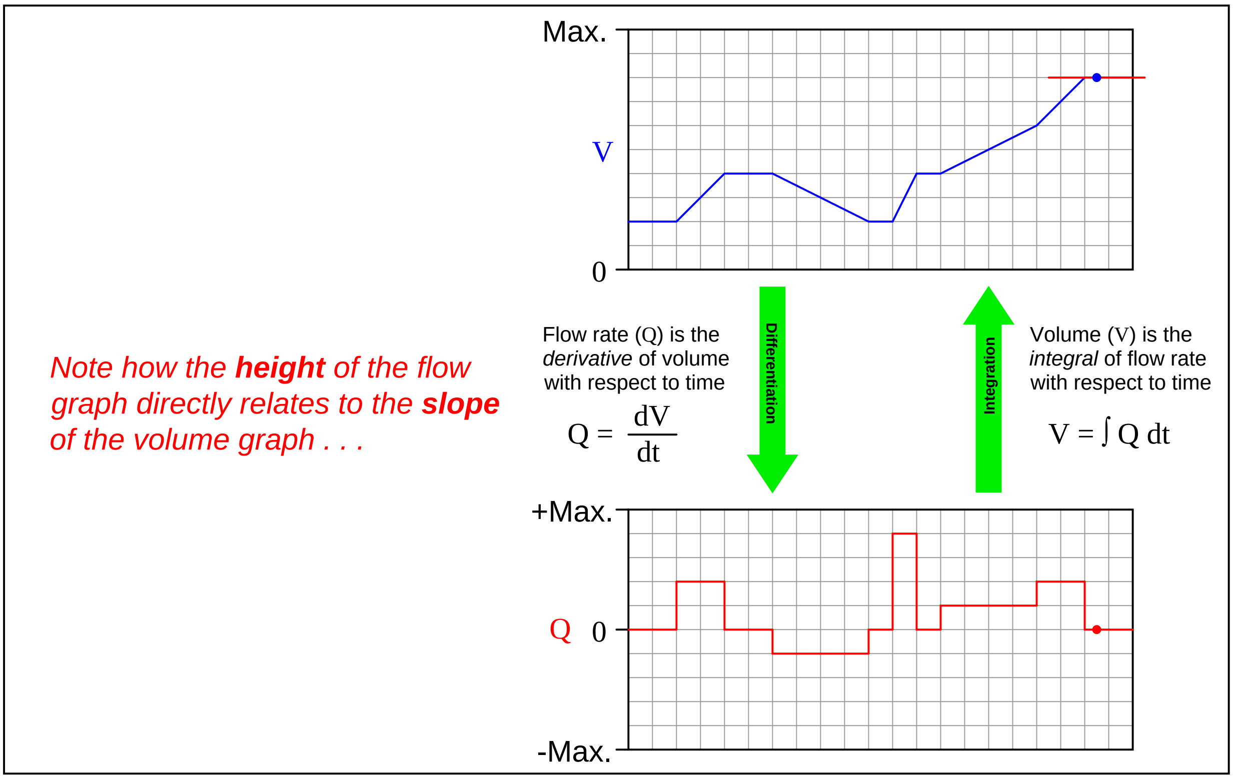

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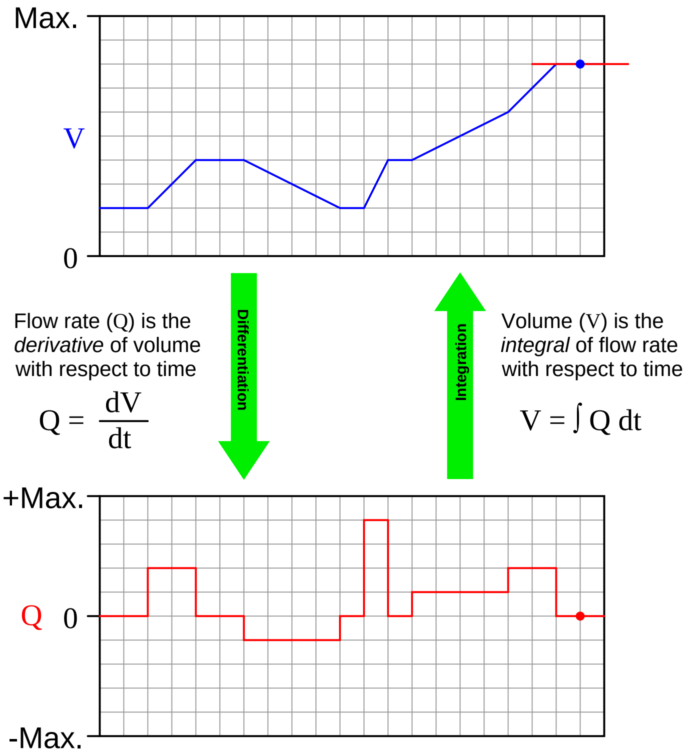

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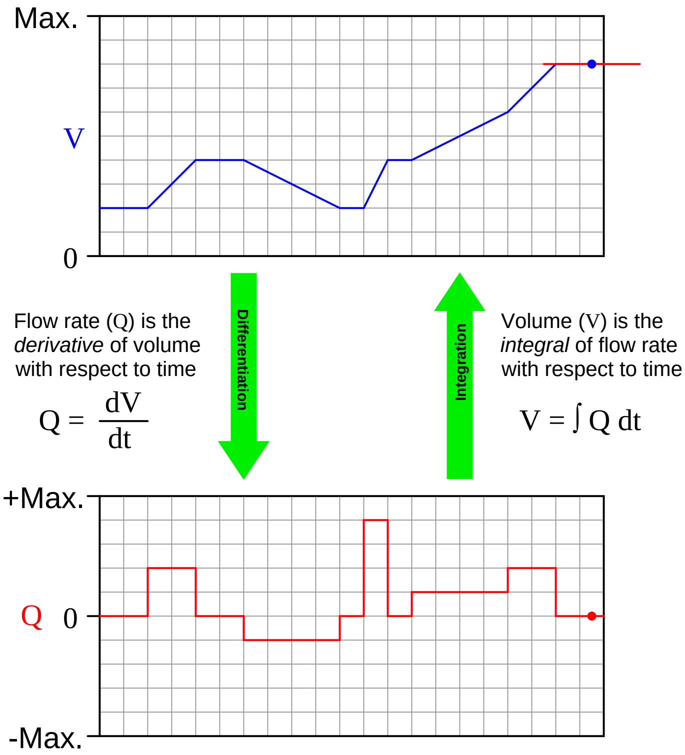

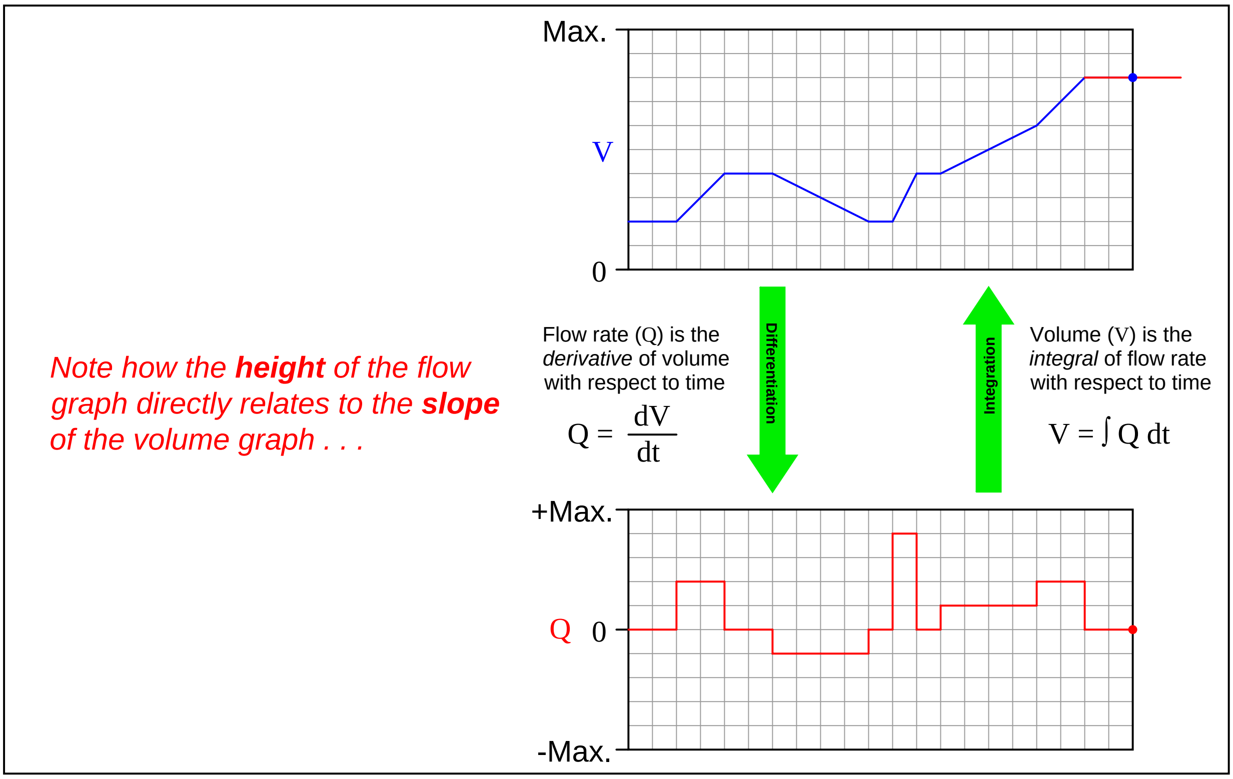

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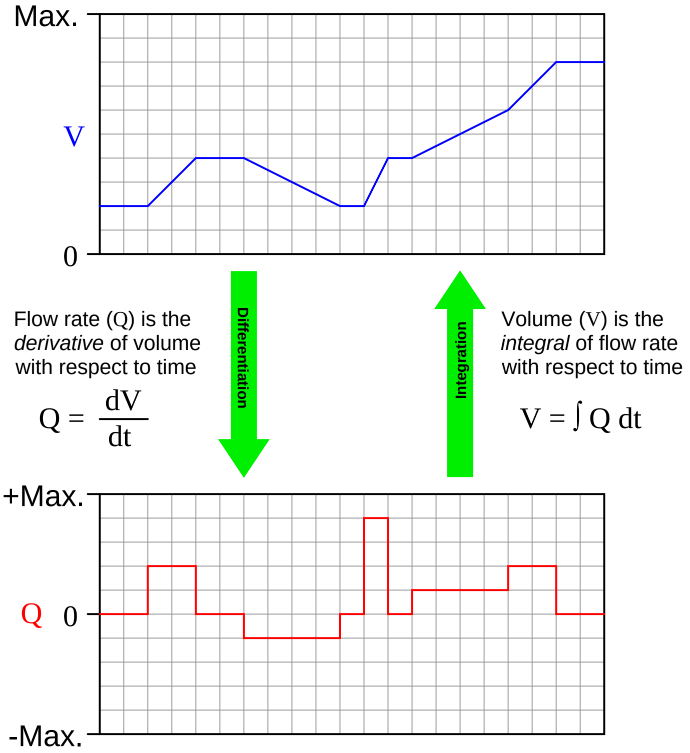

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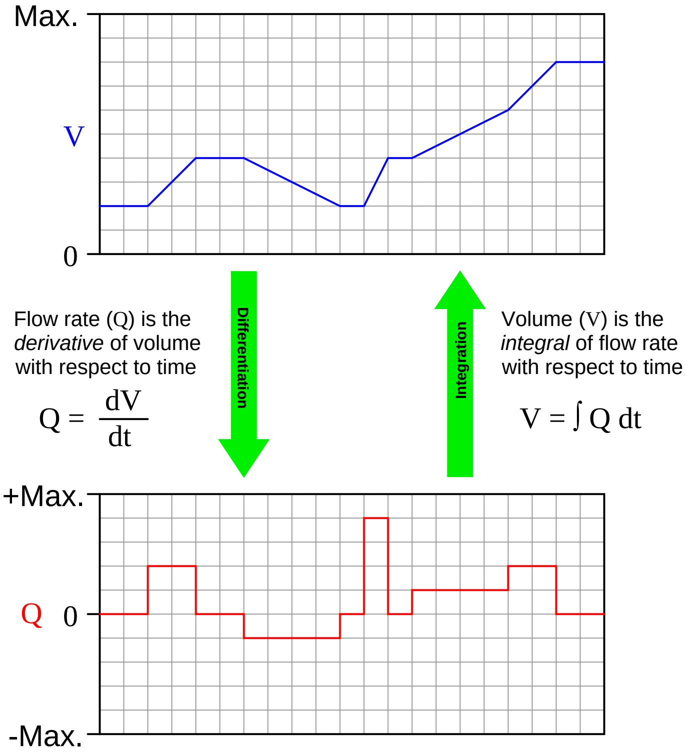

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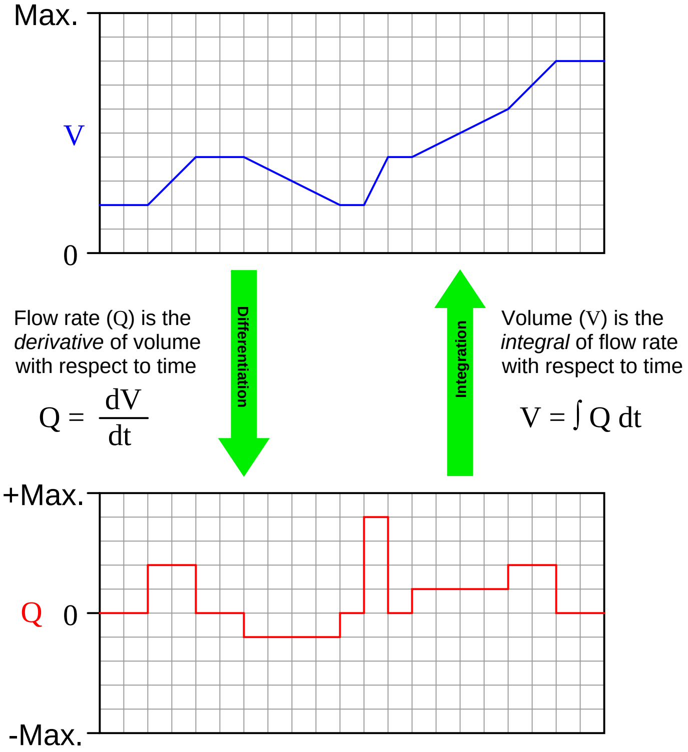

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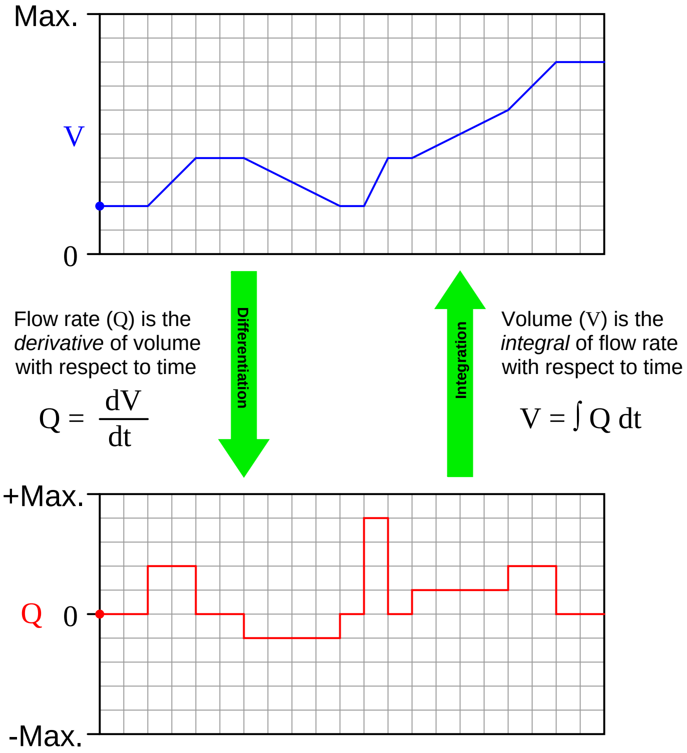

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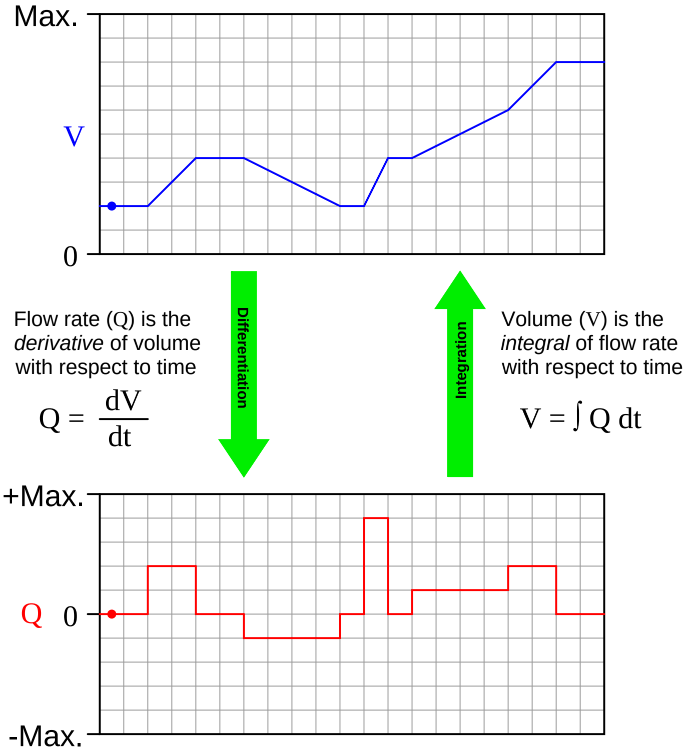

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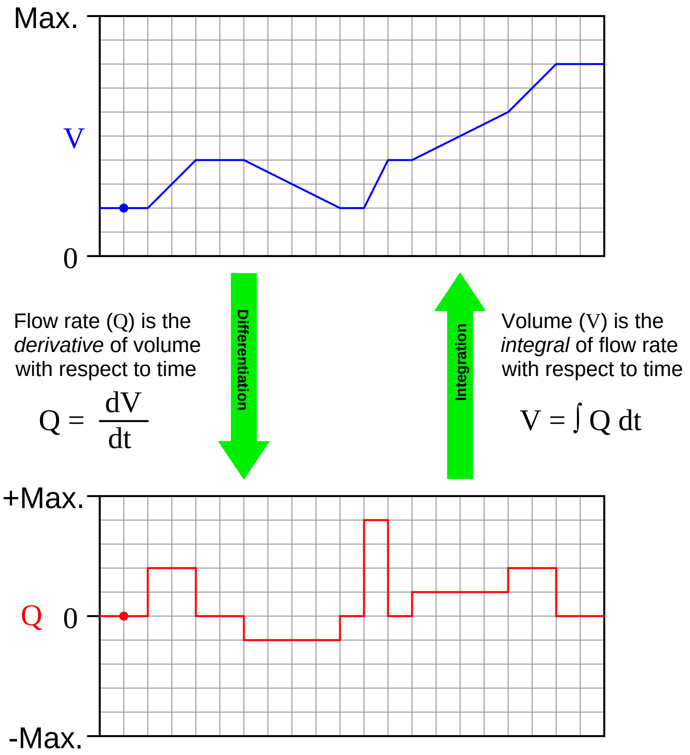

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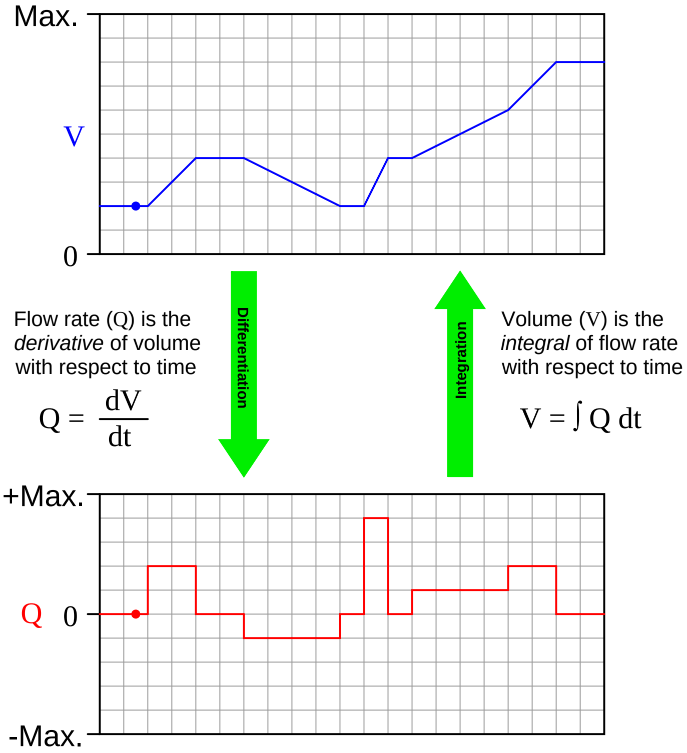

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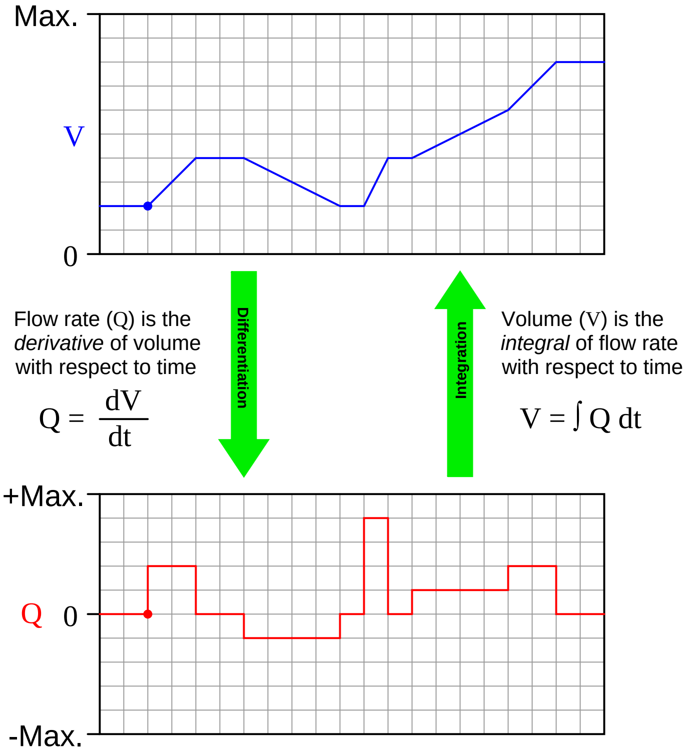

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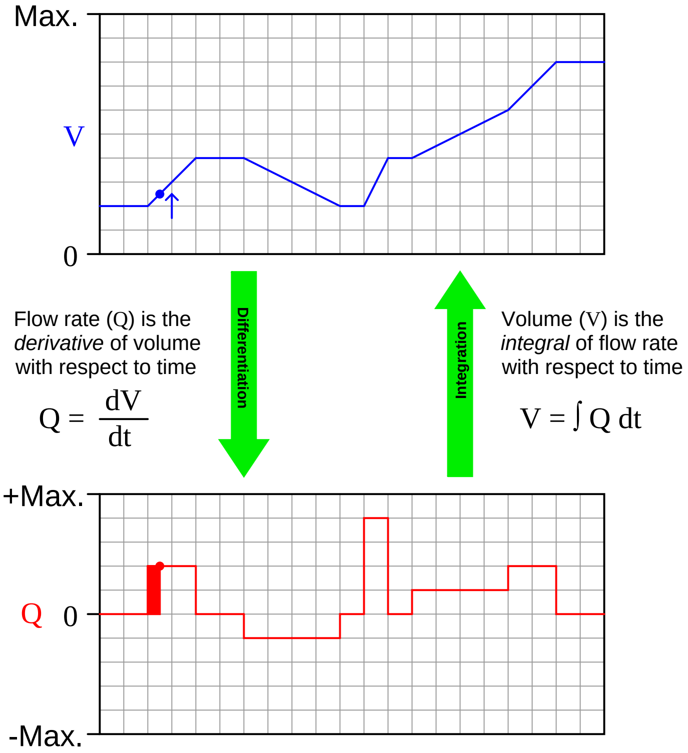

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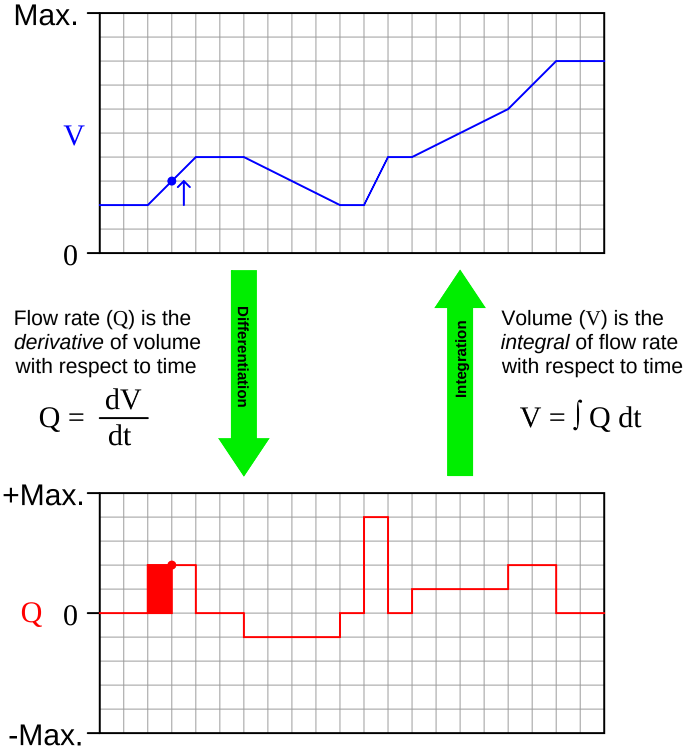

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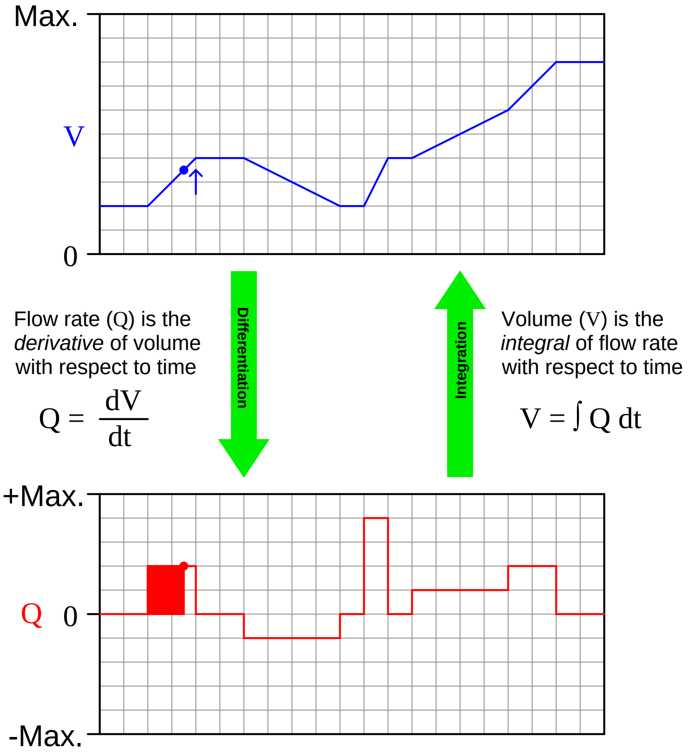

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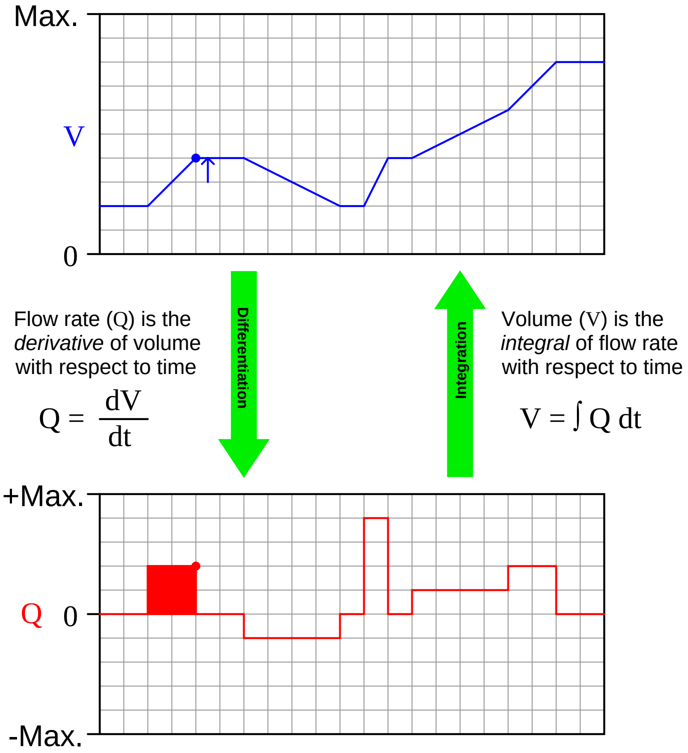

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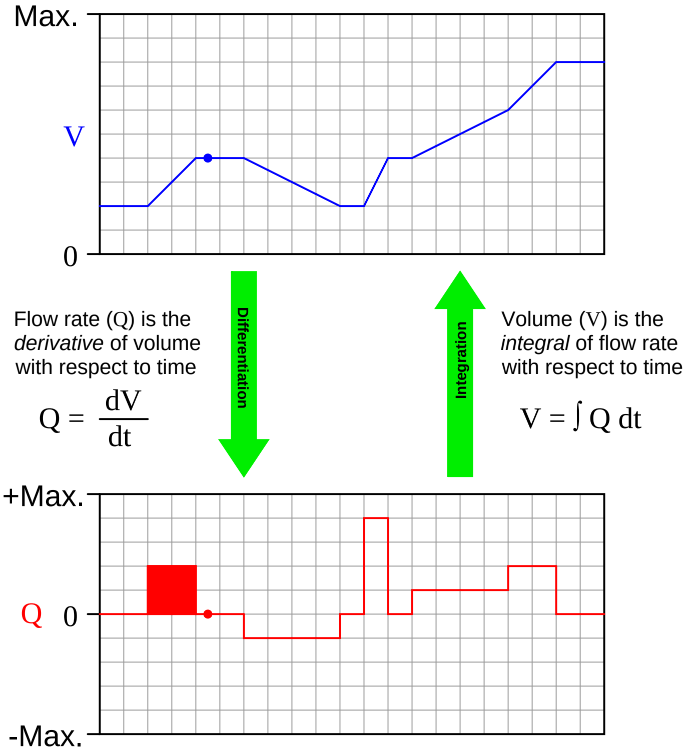

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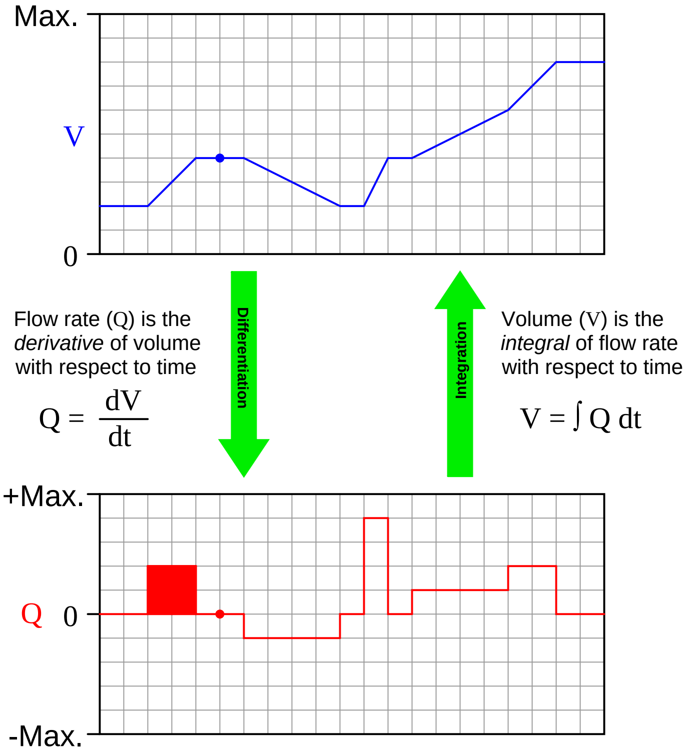

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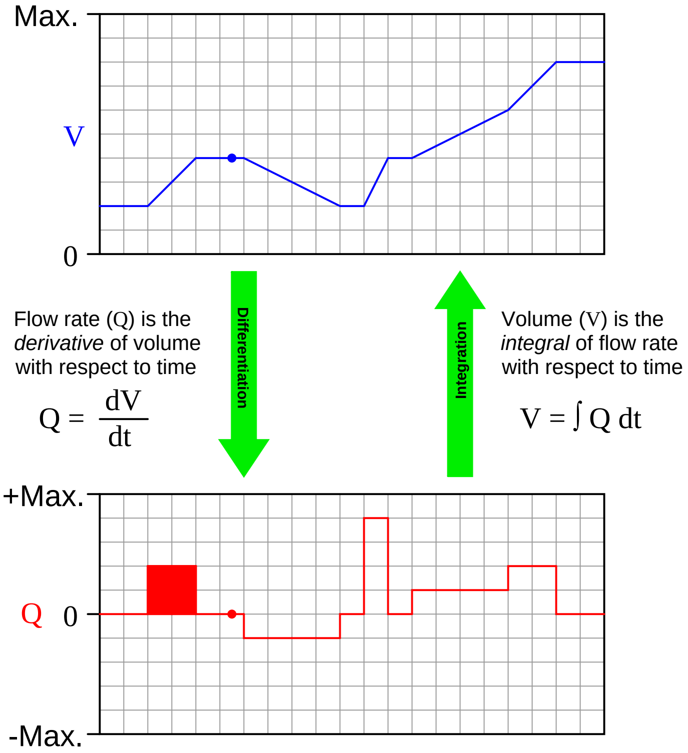

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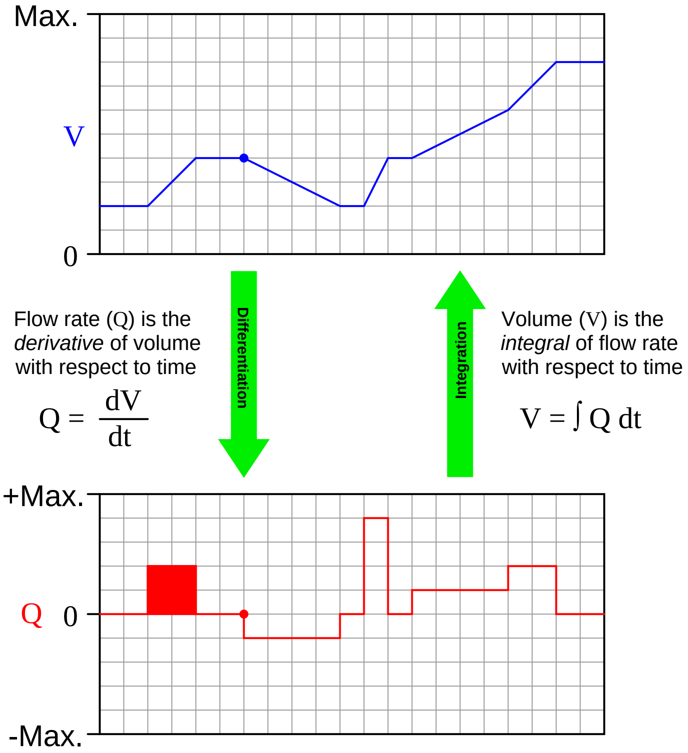

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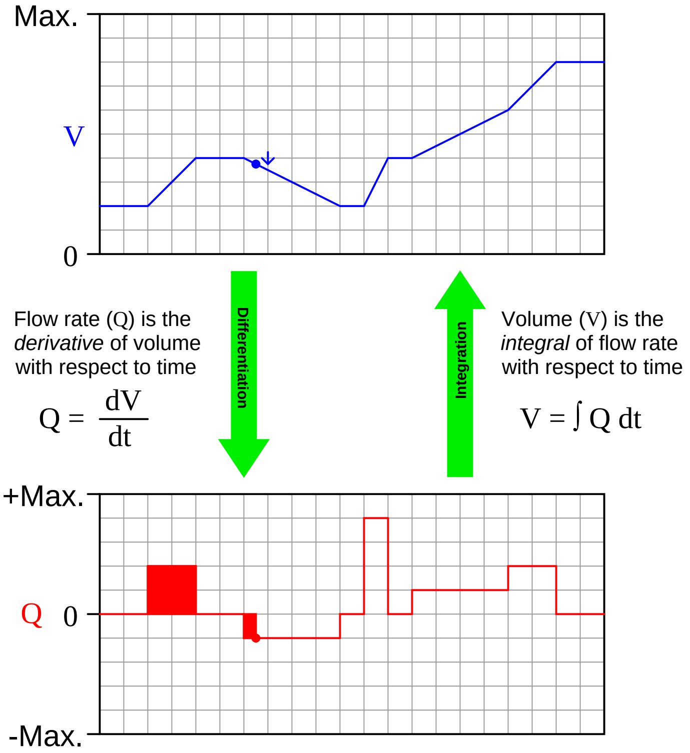

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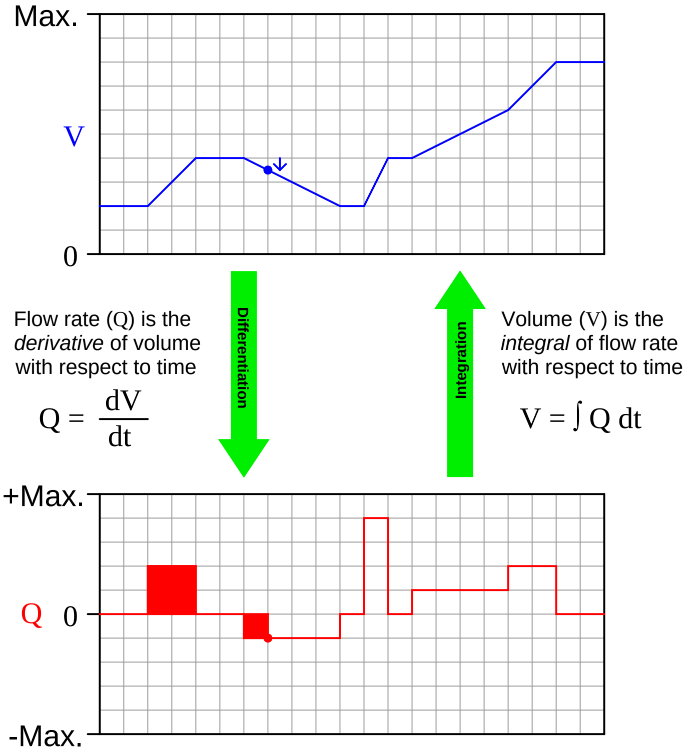

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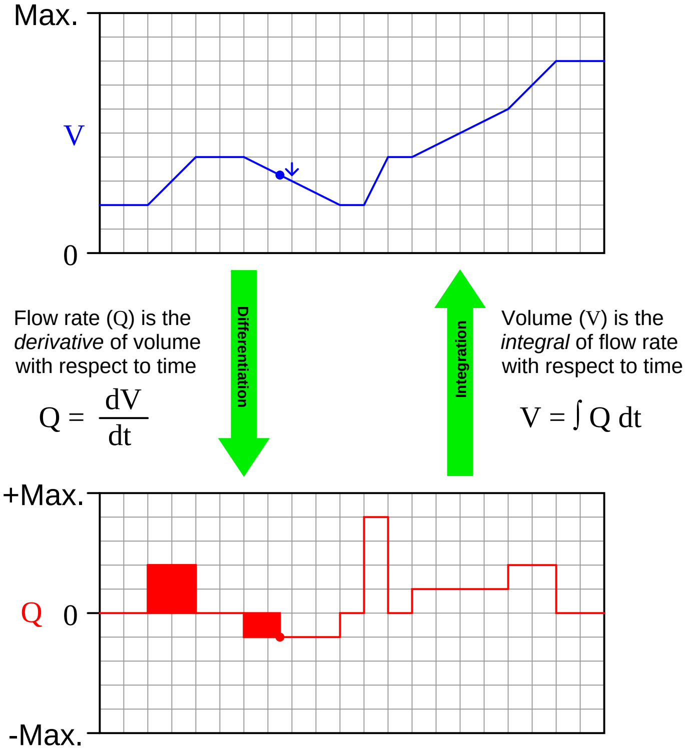

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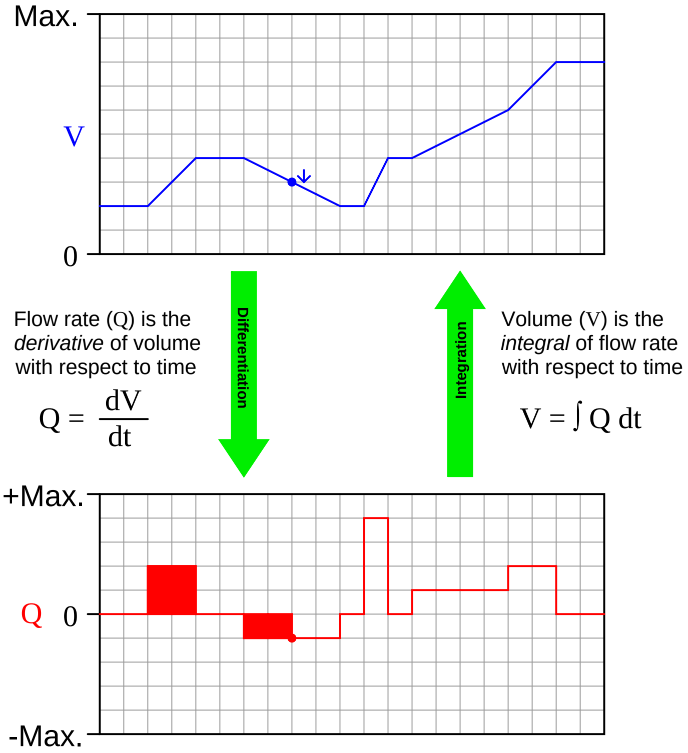

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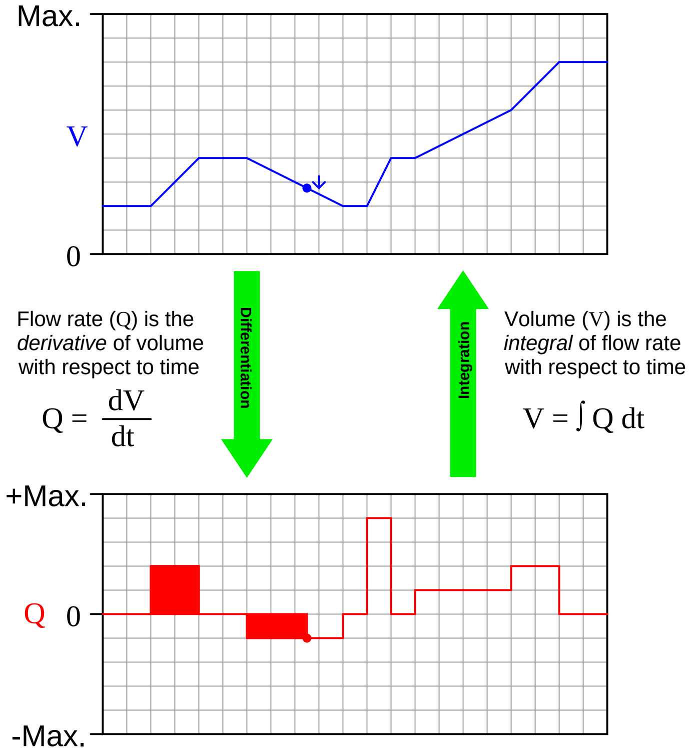

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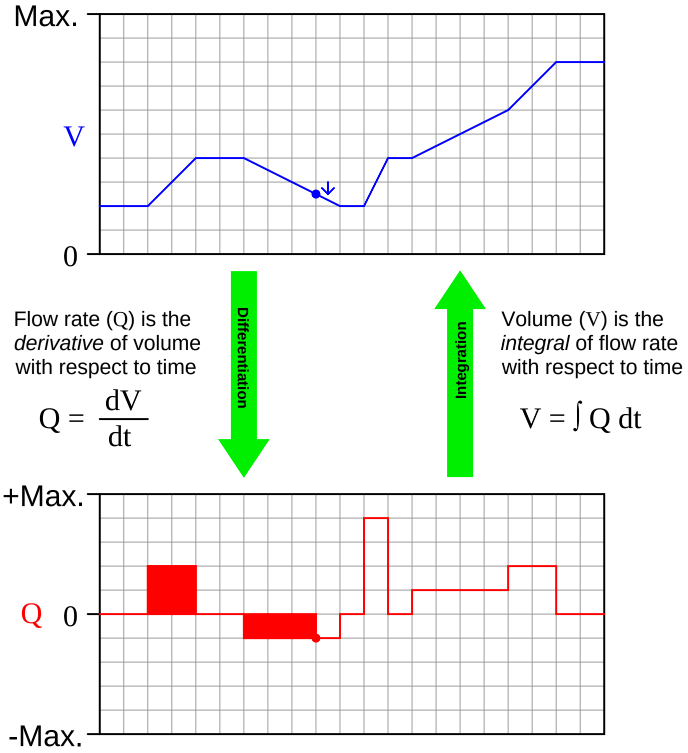

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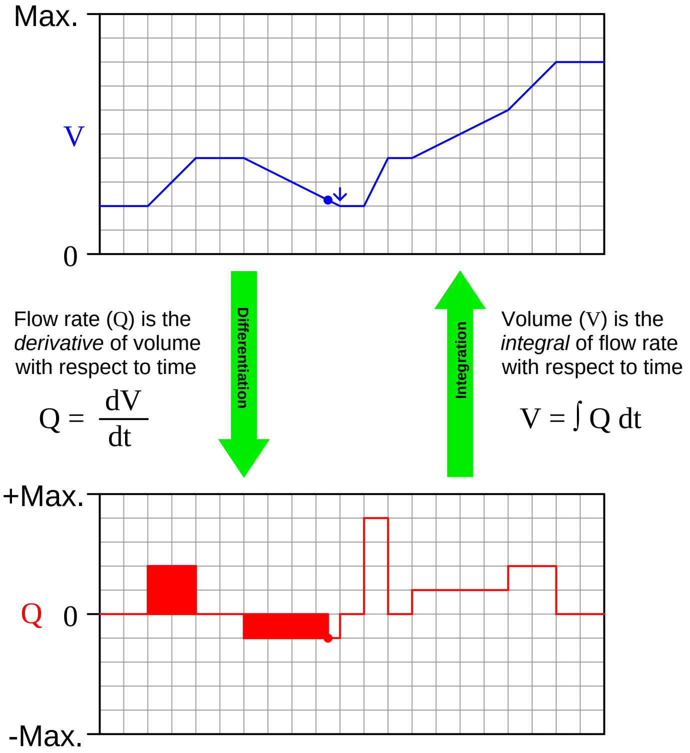

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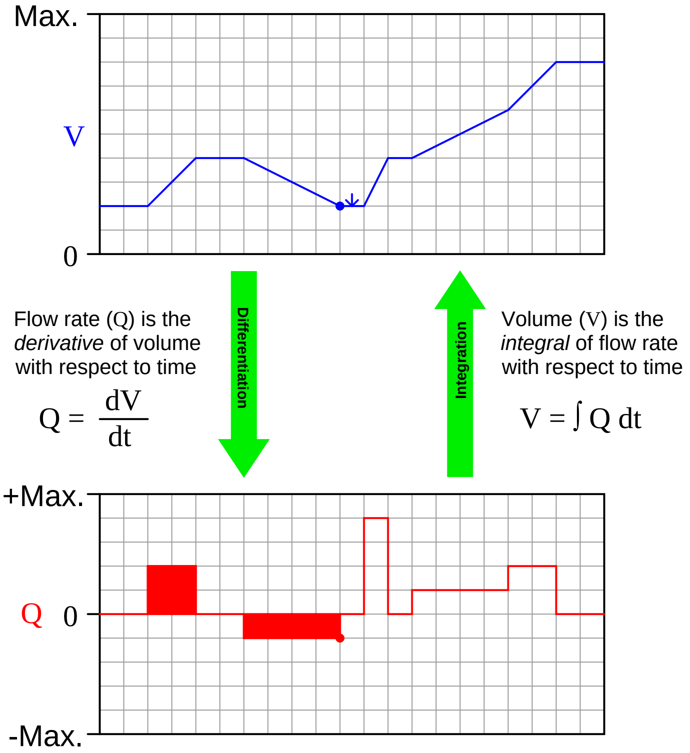

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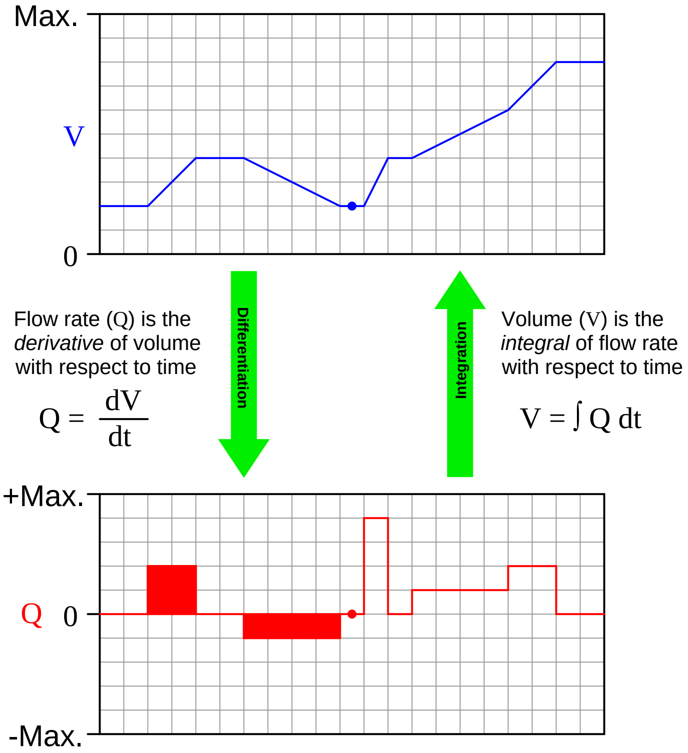

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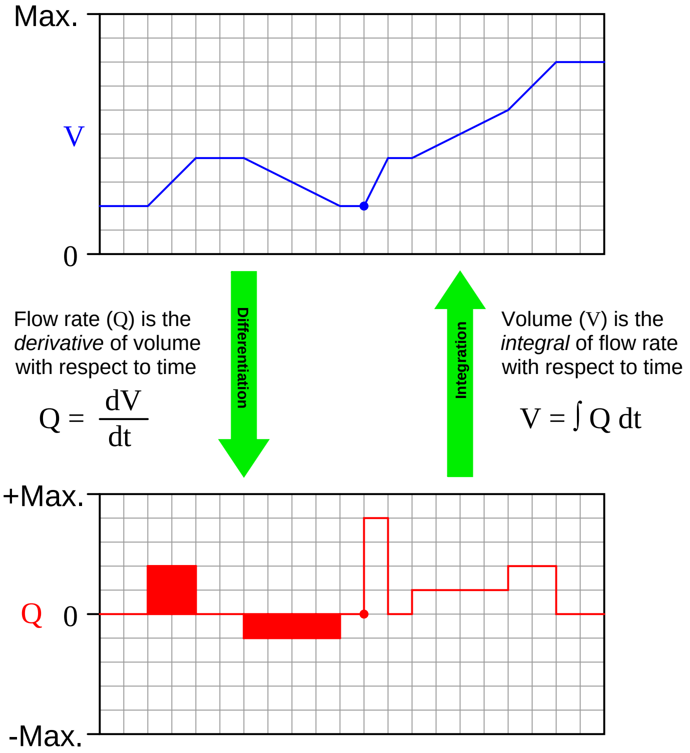

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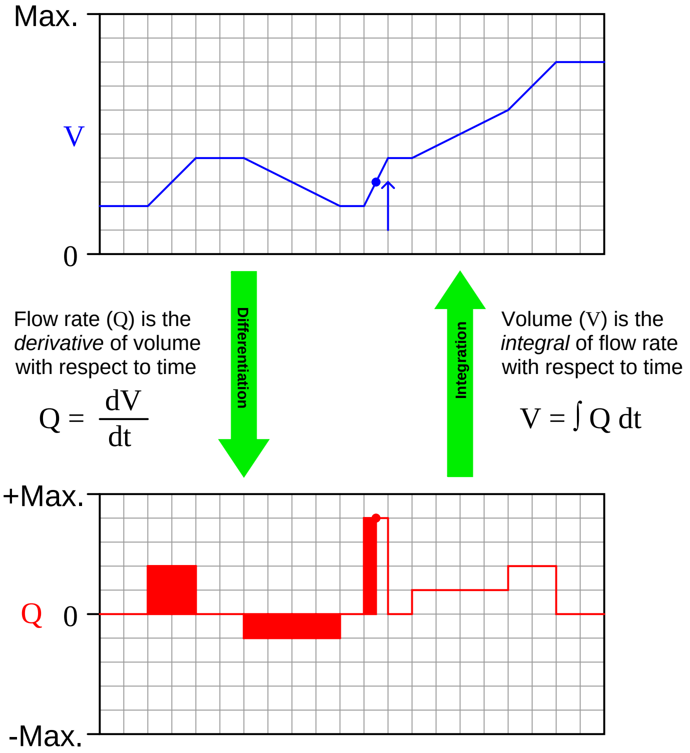

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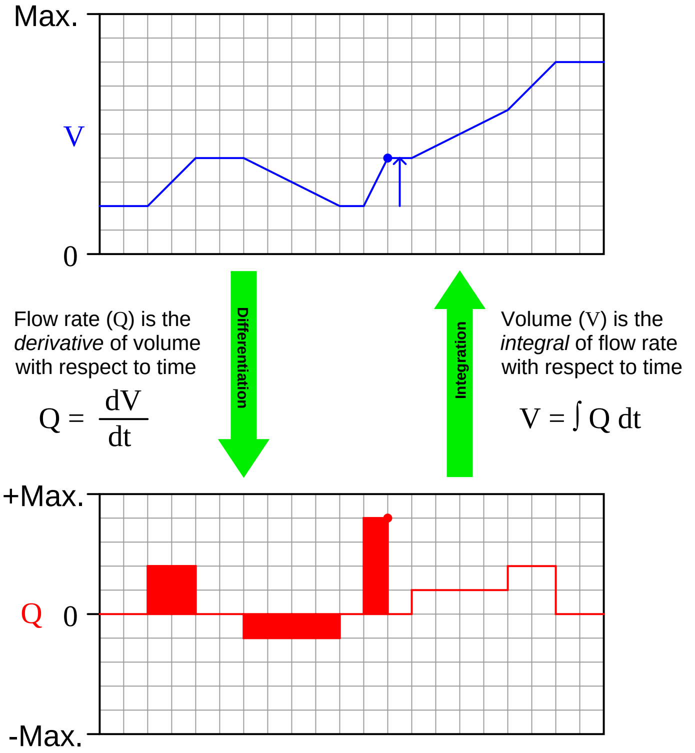

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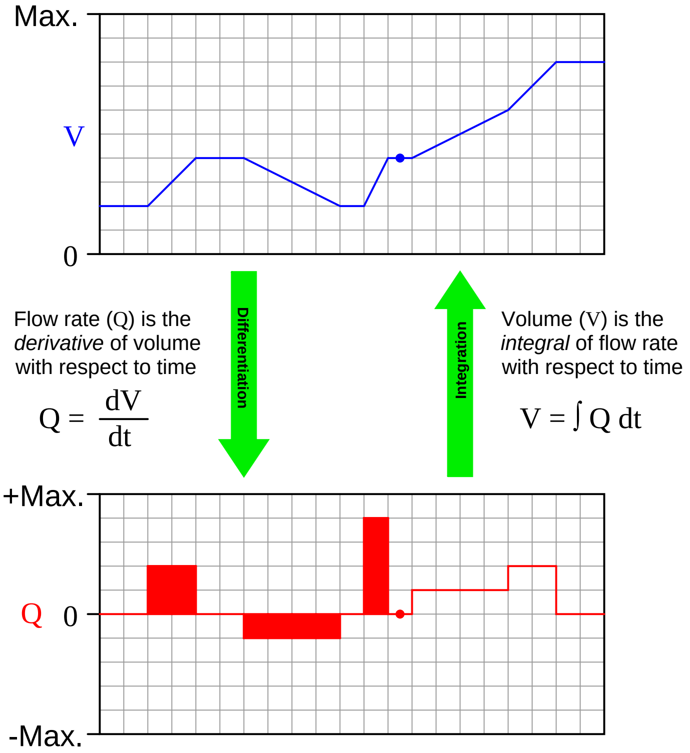

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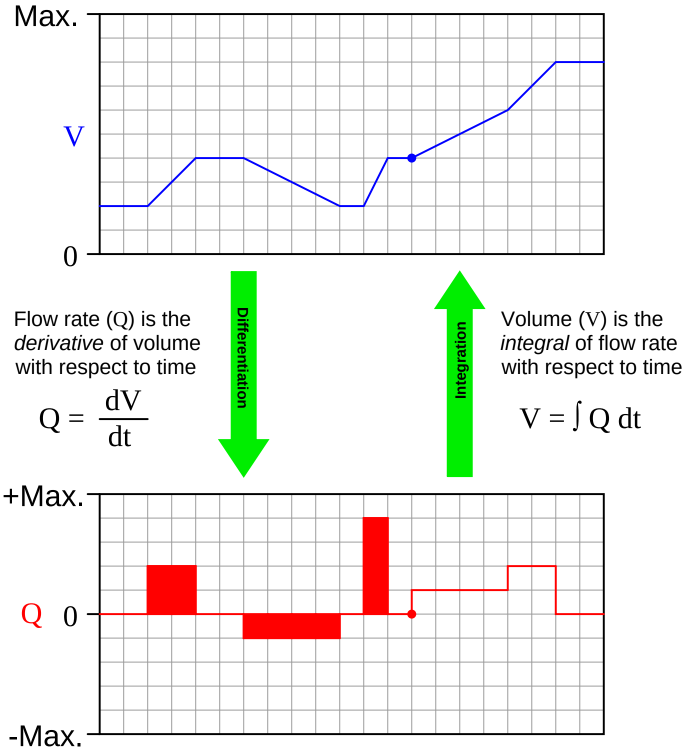

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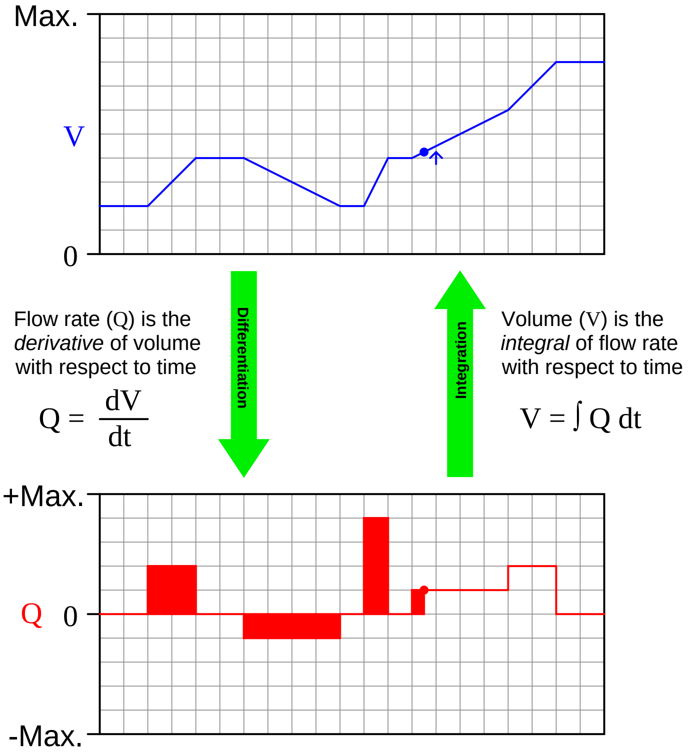

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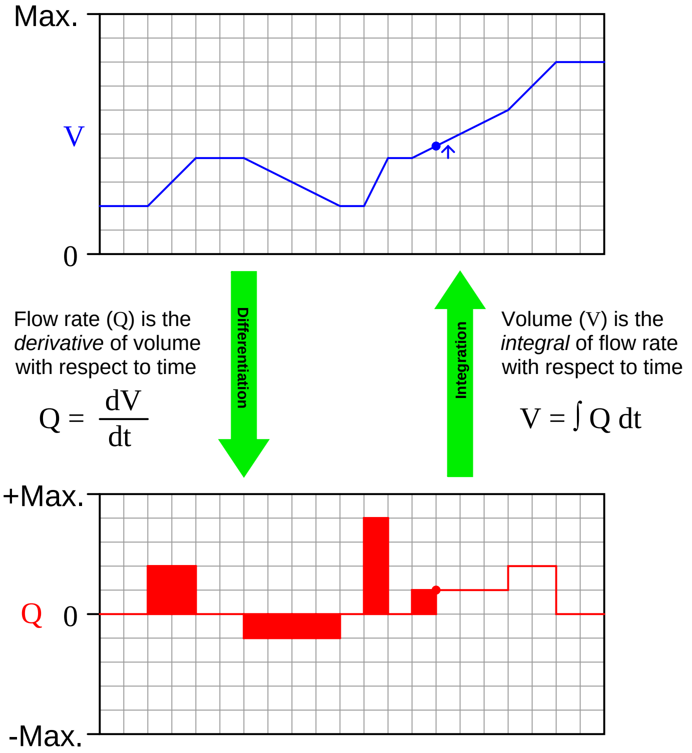

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Volume (V) is the *integral* of flow rate with respect to time

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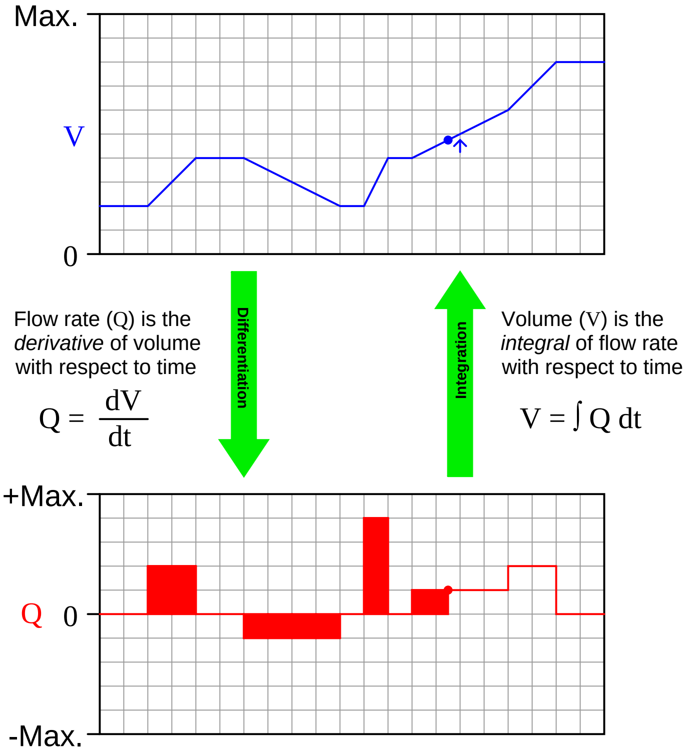

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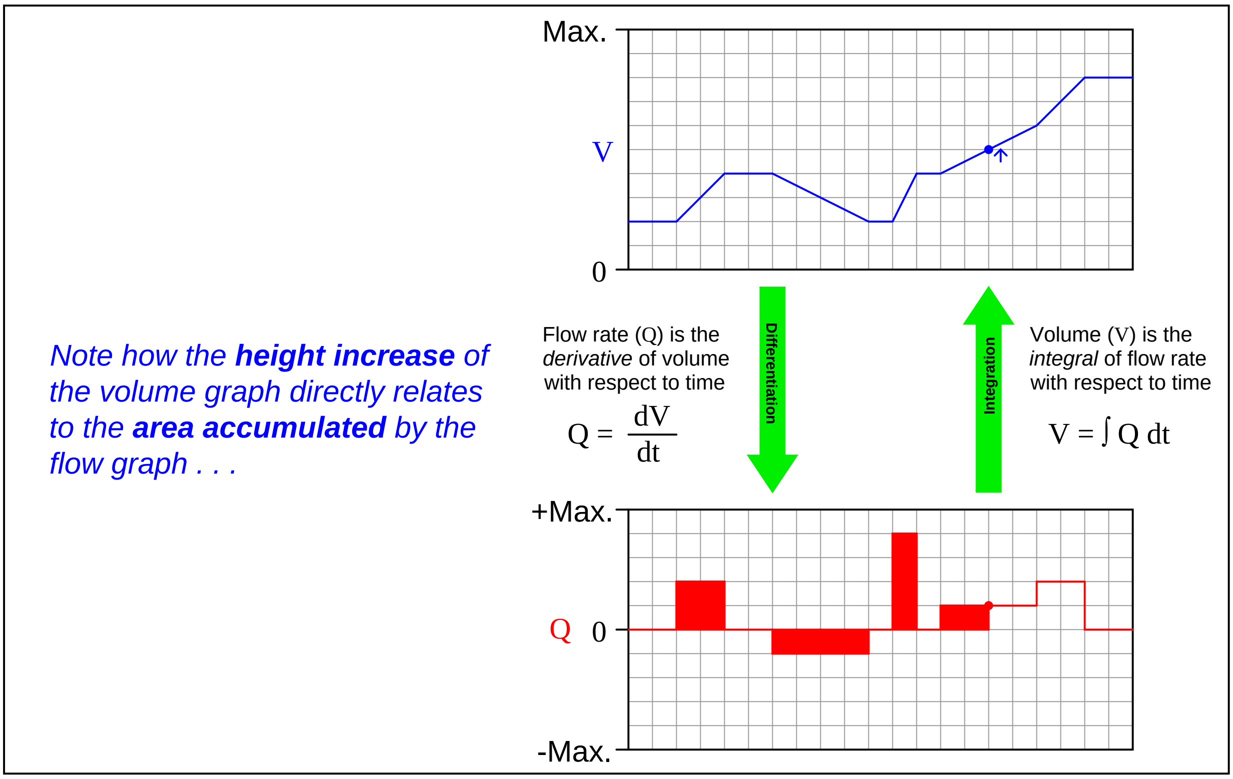

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Max.
V
0
Differentiation
Integration
+Max.
Q
0
-Max.

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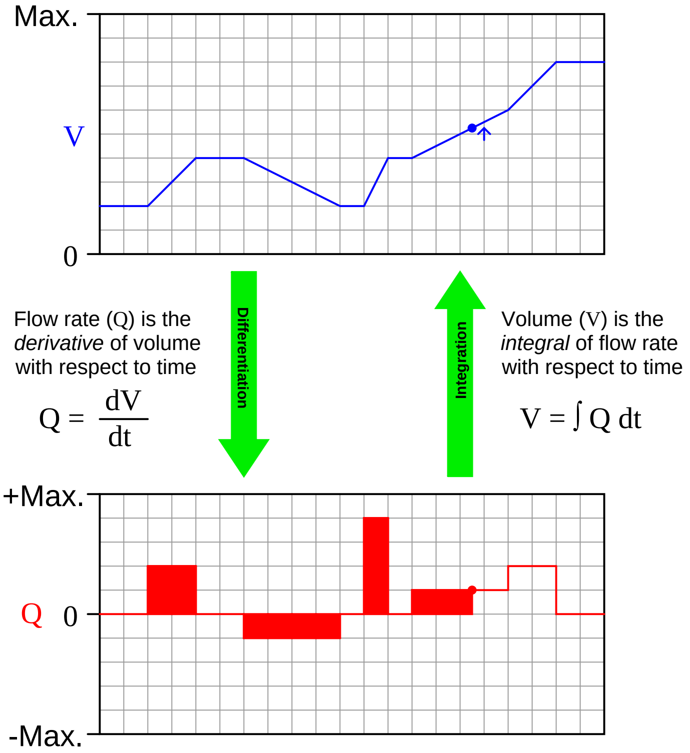

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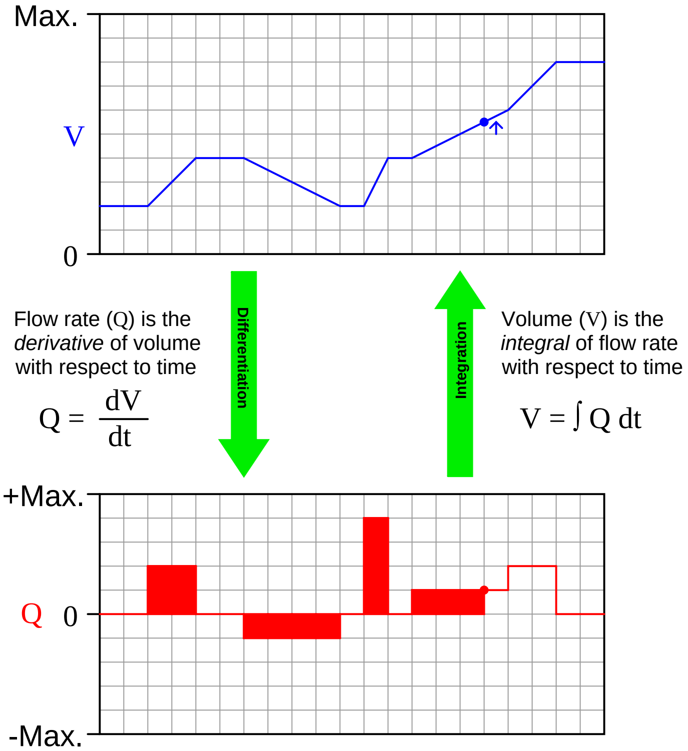

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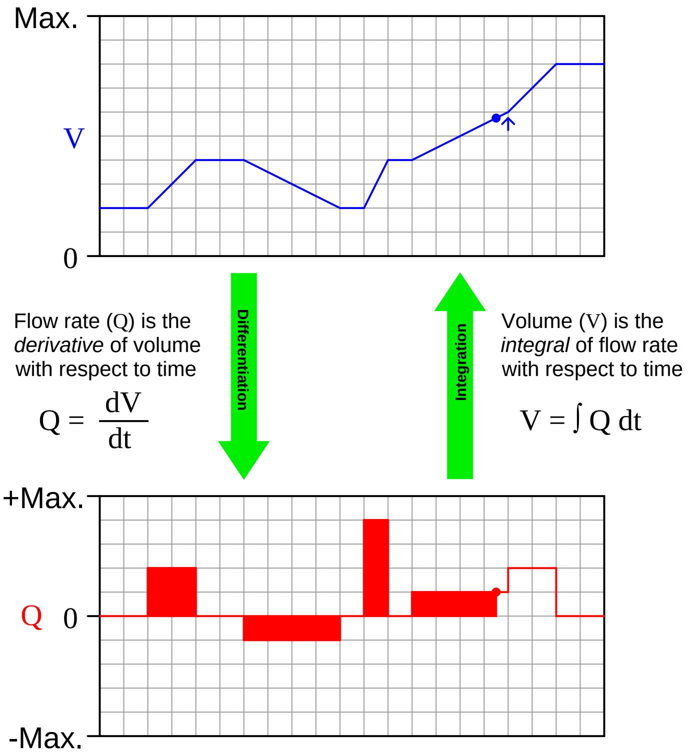

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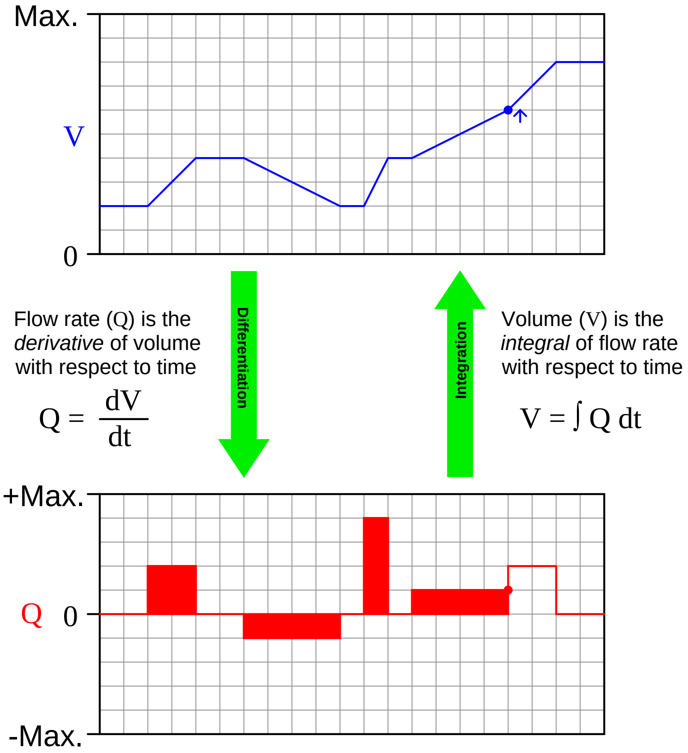

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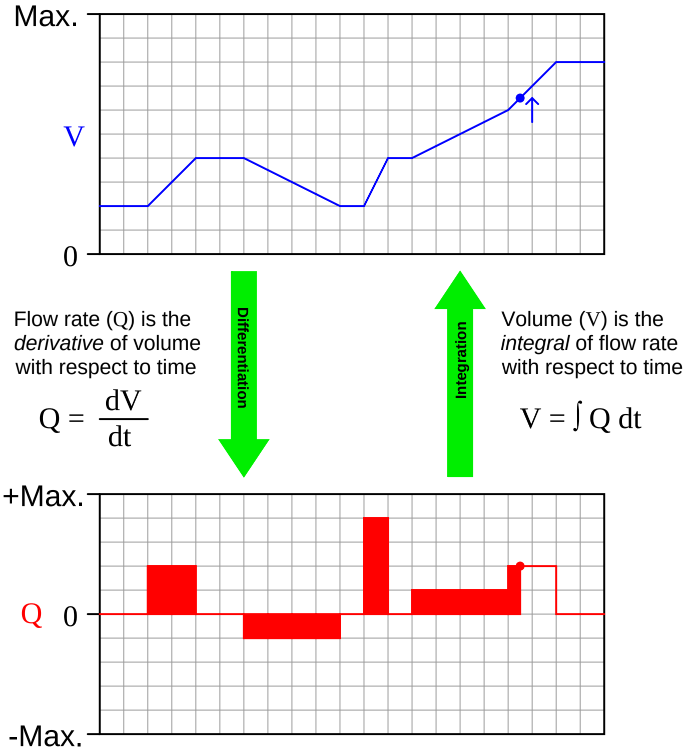

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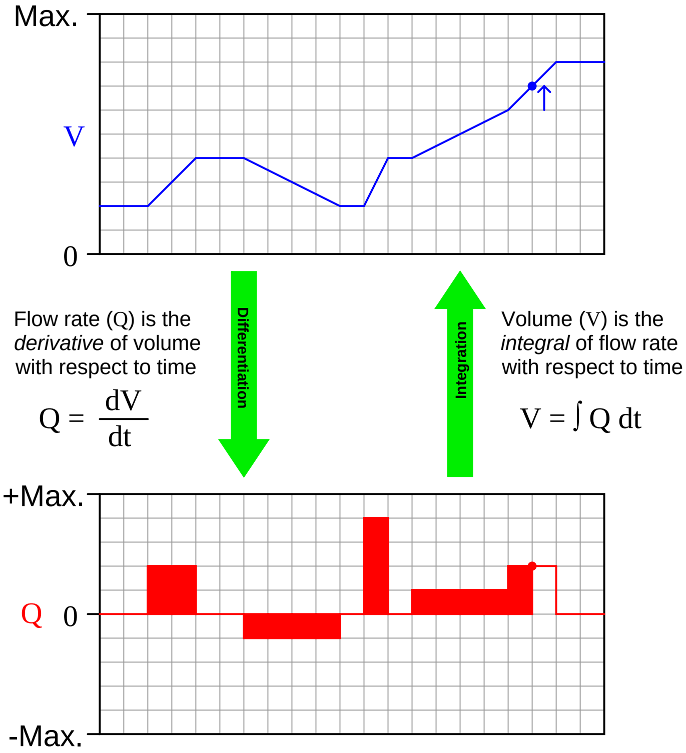

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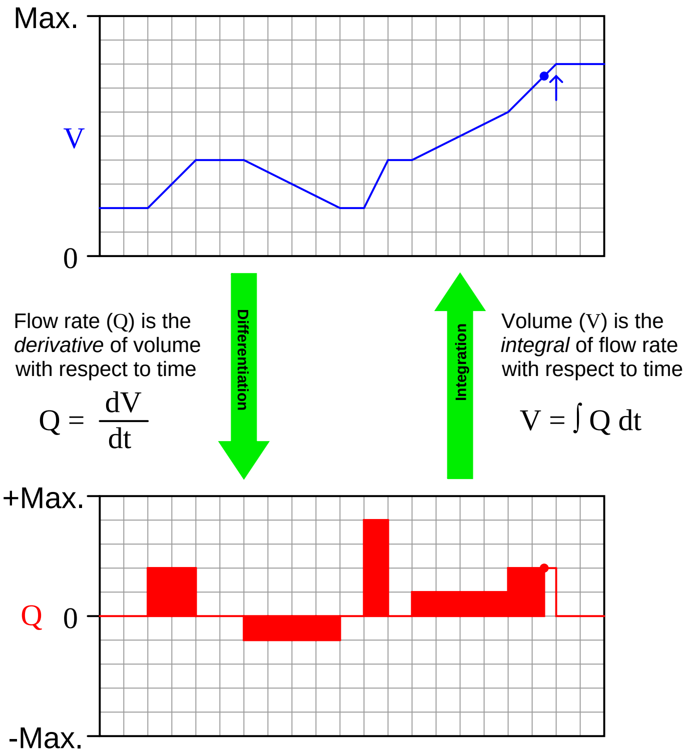

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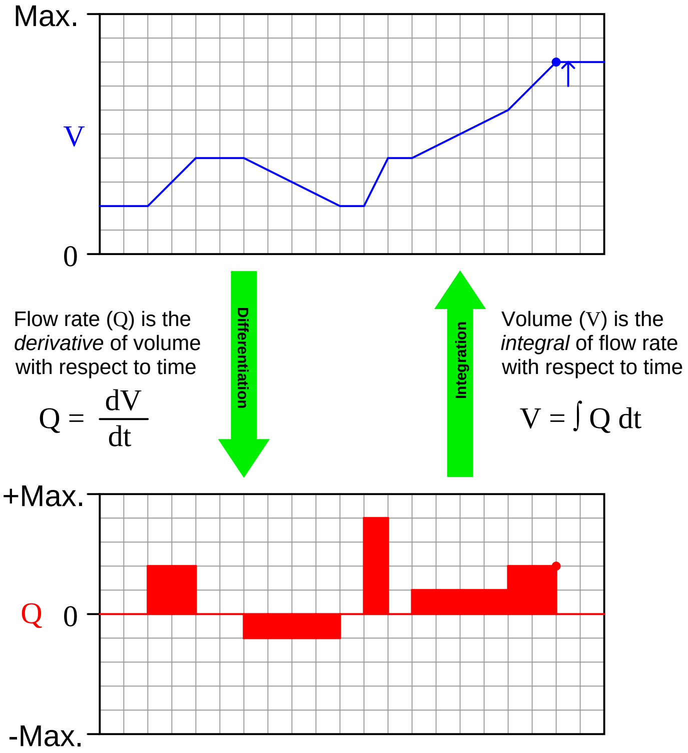

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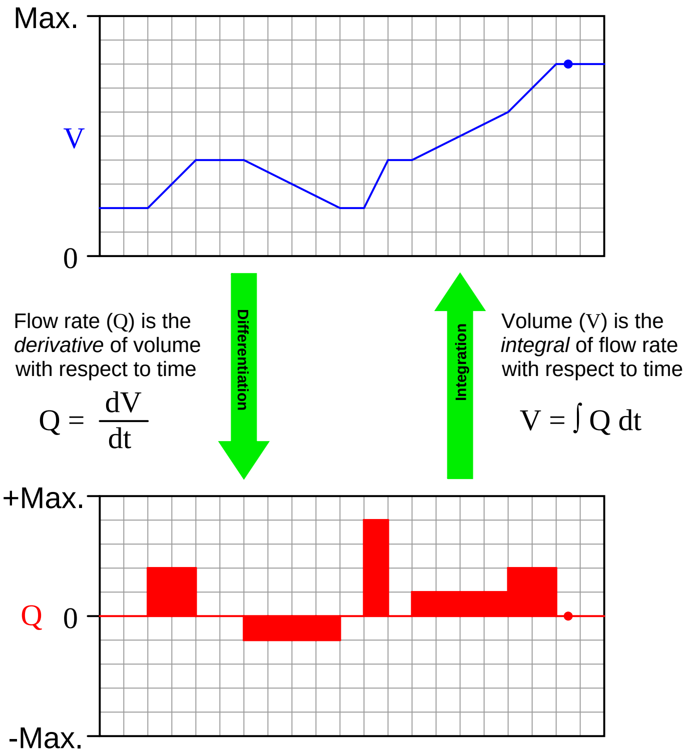

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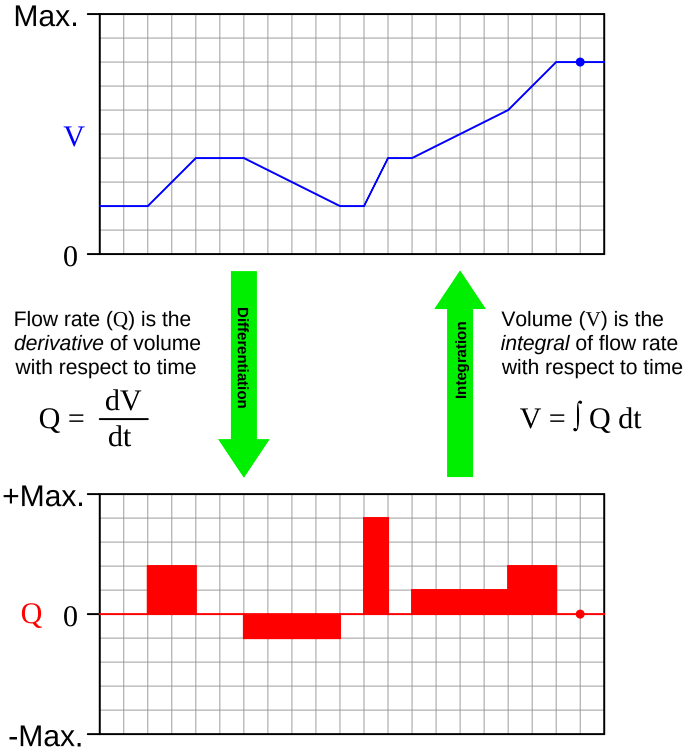

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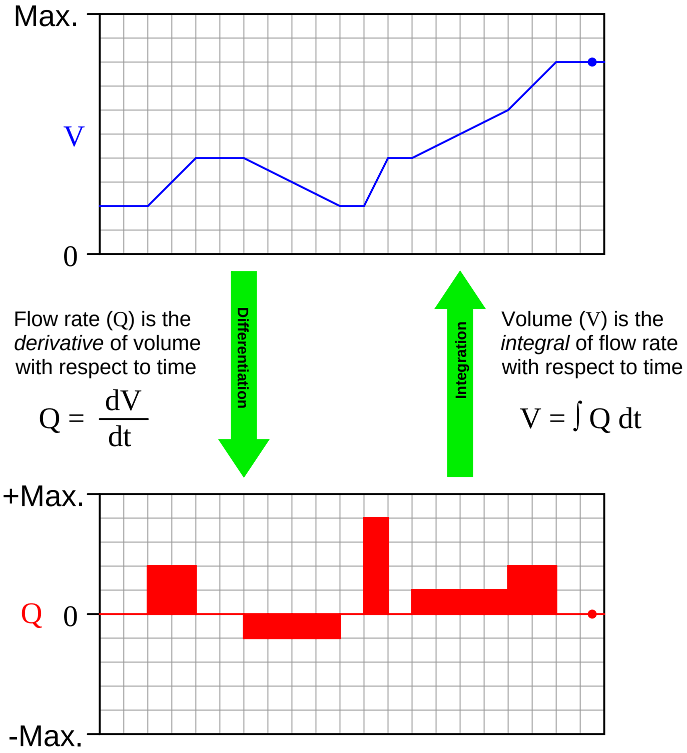

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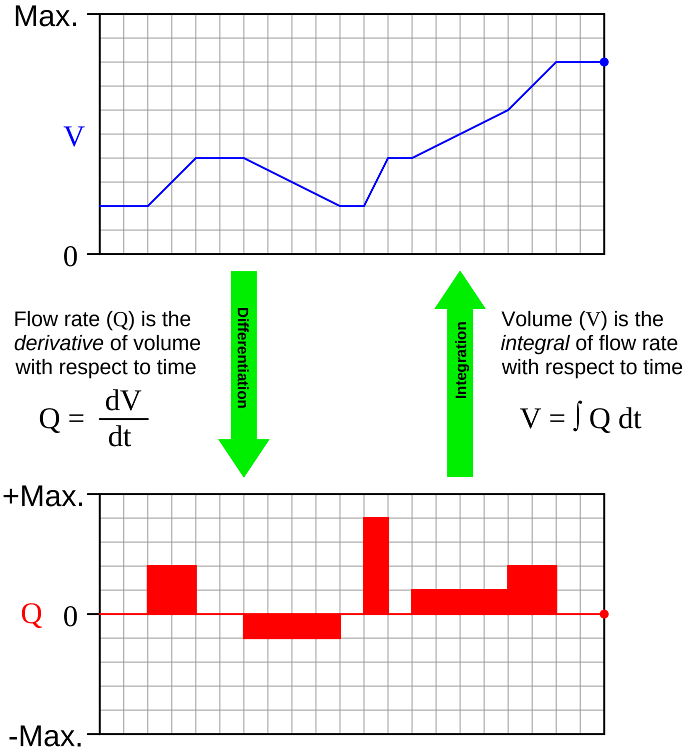

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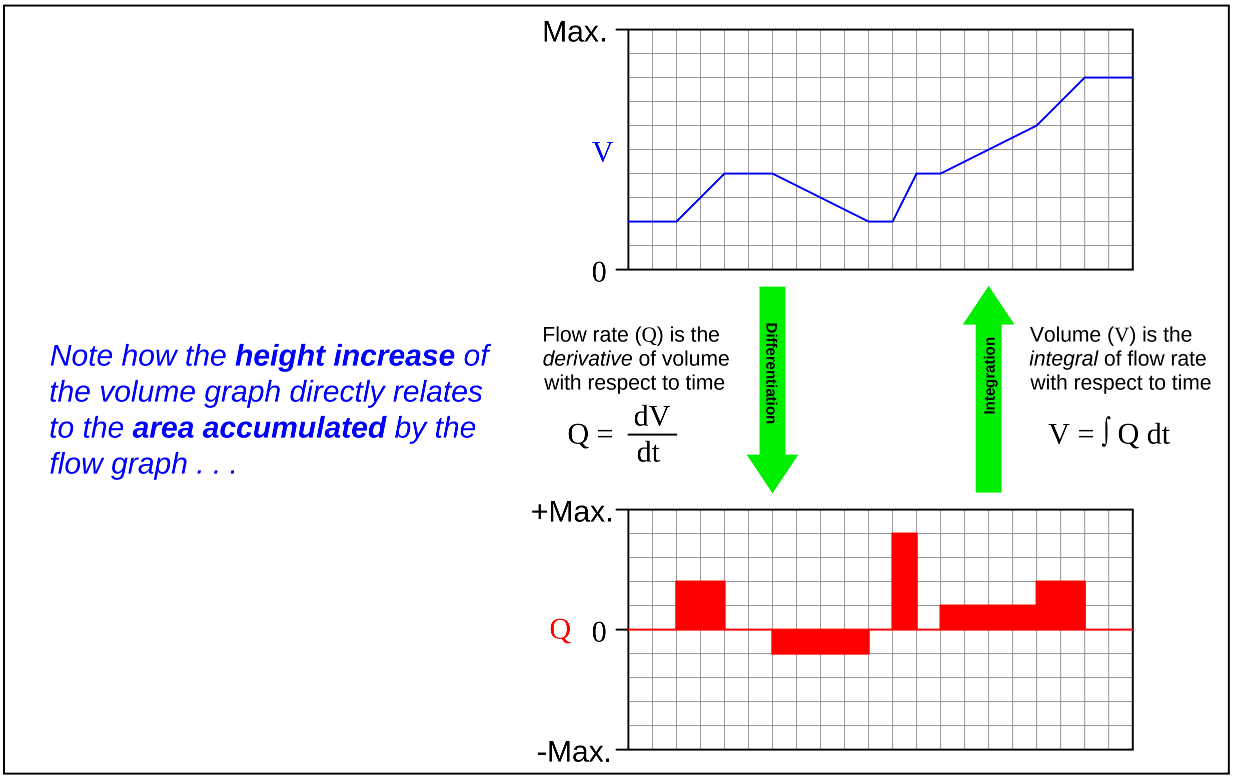

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Answers

Answer 1

Nothing to note here.

Notes

Notes 1

The purpose of this animation is to let students study the generation of characteristic curves and reach their own conclusions. Similar to experimentation in the lab, except that here all the data collection is done visually rather than through the use of test equipment, and the students are able to “see” things that are invisible in real life.