INTEGRATION - TRAPEZIUM RULE

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Use the Integration Applet to calculate the area under the curve for each of the following definite integrals by using the Trapezium rule and by integration.

Question 1.

$$\int_0^4 x^2\,dx$$

Question 2.

$$\int_{-1}^1 (4-3x-x^2)\,dx$$

Question 3.

$$\int_0^4 \frac{9}{\sqrt{4+3}}\,dx$$

Question 4.

$$\int_1^2 x^2 lnx\,dx$$

Question 5.

$$\int_1^2 ((x-2)lnx+1)\,dx$$

Question 6.

$$\int_0^2 x\sqrt{2-x}\,dx$$

Question 7. *Explain the difference between a convex and concave curve for a given domain.*

Question 8. *For each of the six functions, state if the curve is convex or concave in the given domain.*

Question 9. *Compare the area under each graph using:*

a) *the trapezium rule*
b) *by integration*

State how these two methods for calculation the area differ, if the curve is convex or concave.

Question 10. *Evaluate the integrals in questions 1 to 6.*