Definite integral

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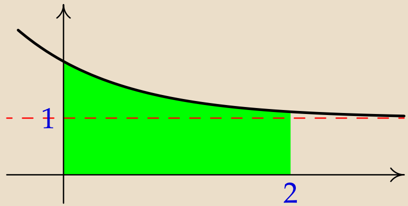
Look at three or four or twenty my quizzes and then fill in my questionnaire please!

Quiz The function on the picture is the function $y = e^x$ reflected about the y-axis and moved by a unit above. (In notation of this document the function e^x can be written as `exp(x)`, or `e^(x)`.) The green region correponds to the interval $x \in [0, 2]$.



1. Write an analytical formula for the function. $y =$ ☐ ?

2. Express the area of the green region as the definite integral.

$$S = \int_{\square}^{\square} \square \,\mathrm{d}x$$?

3. Complete the following formula. This formula can be used later for integration.

$$\int e^{-x}\mathrm{d}x = \square + C$$?

4. Integrate and use the Newton–Leibniz formula.

$$S = \Big[\ \square\ \Big]_{\square}^{\square}$$?

5. Substitute the limits and evaluate the integral. $S =$ ☐ ?

6. Write the volume of the of the solid of revolution formed by revolving the green region about the x-axis as a definite integral.

$$V = \pi \int_{\boxed{}}^{\boxed{}} \boxed{}\, \mathrm{d}x$$

?

7. Simplifying and integrating we get

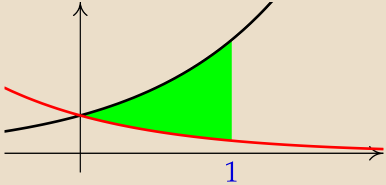
$$V = \pi \Big[\boxed{} \Big]_{\boxed{}}^{\boxed{}}$$

?

8. Find the volume. $V = \boxed{}\,\pi$

?

Quiz The functions on the picture are $y = e^x$ and $y = e^{-x}$ (In notation of this document we can write the function e^x as `exp(x)` or `e^(x)` and the function e^{-x} as `exp(-x)` or `e^(-x)`.) The green region correponds to $x \in [0, 1]$.



1. The black curve is $y =$ ______ ?

2. The red curve is $y =$ ______ ?

3. Write the area of the green region as a definite integral.

$$S = \int_{\square}^{\square} \square \, \mathrm{d}x$$?

4. Integrate

$$S = \Big[\square \Big]_{\square}^{\square}$$?

5. Substitute limits and evaluate $S =$ ______ ?

Home Page
Print
Title Page
Page 4 of 9
Go Back
Full Screen
Close
Quit

6. Write the volume of the solid of revolution which can be obtained by revolving the green region about the x-axis as a definite integral.

$$V = \pi \int_{\square}^{\square} \square \, \mathrm{d}x$$

?

7. Simplify and integrate.

$$V = \pi \Big[\square \Big]_{\square}^{\square}$$

?

8. Find the volume. $V = \square \, \pi$

?

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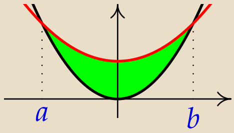
Definite integral

file int-urc.tex

Quiz The functions on the picture are $y = x^2$ and $y = \dfrac{x^2}{2} + 2$ (In the notation of this document you can write something like `y=x^2` and `y=x^2/2+2`).



1. The black curve is: $y = \boxed{}$?

2. The red curve is: $y = \boxed{}$?

3. Find the intercepts of both curves: $a = \boxed{}$ $b = \boxed{}$?

4. Write the area of the green region as a definite integral.

$$S = \int_{\boxed{}}^{\boxed{}} \boxed{}\, \mathrm{d}x$$?

5. The function inside integral is a polynomial. Find the coefficinets of this polynomial.

$$S = \int_{\boxed{}}^{\boxed{}} \left(\boxed{}\, x^2 + \boxed{}\right) \mathrm{d}x$$?

6. Integrate and use the Newton–Leibniz formula.

$$S = \left[\boxed{}\right]_{\boxed{}}^{\boxed{}} = \boxed{}$$?

7. Write the volume of the solid obtained by a revolution of the shaded region about the x-axis as a definite integral.

$$V = \pi \int_{\boxed{}}^{\boxed{}} \boxed{}\, \mathrm{d}x$$

?

8. The function in the integral is a polynomial. Find the coefficients of the polynomial (complete the pattern by numbers).

$$V = \pi \int_{\boxed{}}^{\boxed{}} \left(\boxed{}\, x^4 + \boxed{}\, x^2 + \boxed{}\right) \mathrm{d}x$$

?

9. Integrate and use the Newton–Leibniz formula.

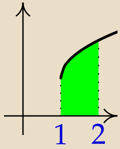
$$V = \pi \left[\boxed{}\right]_{\boxed{}}^{\boxed{}}$$

?

10. Evaluate the integral. $V = \boxed{}\,\pi$

?

Quiz The graph of the picture is the curve $y=\sqrt{x}$ shifted by unit to the right and above. (In notation of this document write the fucntion $\sqrt{x}$ as `sqrt(x)` or `x^(1/2)`.)



1. Analytical formula for the function: $y=$ ______ ?

2. Write the area of the colored region as an integral

$$S=\int_{\square}^{\square} \square \,\mathrm{d}x$$?

3. For integration we use the formula (complete)

$$\int \sqrt{x}\mathrm{d}x=\int x^{\frac{1}{2}}\mathrm{d}x= \square +C$$?

4. Find the indefinite integral

$$S=\Big[\square\Big]_{\square}^{\square}$$?

5. Evaluate the integral: $S=$ ______ ?

6. Write the volume of the corresponding solid of revolution as a definite integral

$$V = \pi \int_{\boxed{}}^{\boxed{}} \boxed{} \, \mathrm{d}x$$

?

7. Simplify and integrate

$$V = \pi \Big[\boxed{} \Big]_{\boxed{}}^{\boxed{}}$$

?

8. Evaluate the volume $V = \boxed{} \pi$

?