



NOTE #2: SUBSTITUTION AND AREA BETWEEN CURVES

Problem 1. Compute $\int \frac{\cos^{-1}(3x)}{\sqrt{1-9x^2}} dx$.

Problem 2. Compute $\int e^{2x} \cos e^{2x} dx$.

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Problem 3. Compute $\int \frac{1}{\sin^2 x \sqrt{1 - \cot x}} dx$.

Problem 4. Compute $\int \frac{e^{\sqrt{x+1}}}{\sqrt{x+1}} dx$.

Problem 5. Compute $\int x^7 \sqrt{x^4 + 5} dx$.

Problem 6. Compute $\int \frac{\sec \frac{1}{x^2} \tan \frac{1}{x^2}}{x^3} dx$.

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Problem 7. Compute $\int \frac{x-x^3}{1+x^4} dx$.

Problem 8. Sketch the region bounded by $y = \sqrt{3x + 12}$ and $y = x + 4$ and find the area between them.

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Problem 9. Sketch the region bounded by $y = 2x^2 + 5$ and $y = 5x^2 - 7$ and find the area between them.

Problem 10. Sketch the region bounded by $y = x^3 - x^2$ and $y = 2x$ and find the area between them.

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Problem 11. Sketch the region bounded by $x = 2y^2$ and $x = 3 + y^2$ and find the area between them.

Problem 12. Sketch the region bounded by $x = y^3 - y^2$ and $x = 12y$ and find the area between them.

Problem 13. Sketch the region bounded by $y = \sin x$ and $x = \frac{2}{\pi}x$ and find the area between them.

Problem 14. Sketch the region bounded by $y = \frac{1}{x^2}$, $y = x^2$ and $y = 4$ and find the area between them.