Name: _____ **Exam 3 Study Guide** March 23, 2024

Find the indicated antiderivative. CHECK YOUR ANSWERS

1. $\displaystyle\int \frac{3x^2}{\sqrt{x^3-1}}\,dx =$

2. $\displaystyle\int \frac{e^{\cot(x)}\csc(x)}{\sin(x)}\,dx =$

3. $\displaystyle\int 6x^2 \sin\left(x^3\right)\cos\left(x^3\right)\,dx =$

4. $\displaystyle\int \frac{1}{\left(\sin^{-1} x\right)^5 \sqrt{1-x^2}}\, dx =$

5. $\displaystyle\int \frac{4x}{x^2+1}\, dx =$

6. $\displaystyle\int \frac{2-4x}{x^2+1}\, dx =$

7. $\displaystyle\int x\sqrt{2x-1}\, dx =$

8. $\displaystyle\int \frac{4}{x\sqrt{x^8-1}}\,dx =$

9. $\displaystyle\int 7x^3\sqrt{x^4-1}\,dx =$

10. $\displaystyle\int \frac{x^2}{\sqrt{1-x^6}}\,dx$

11. $\displaystyle\int \frac{e^{\sqrt{x}}}{\sqrt{x}}\,dx =$

12. $\displaystyle\int \tan^2(x)\sec^2(x)\,dx =$

13. $\displaystyle\int \frac{1}{x\ln(3x)}\,dx =$

14. $\displaystyle\int \frac{\cos x}{\sqrt{1+\sin x}}\,dx =$

15. $\displaystyle\int \frac{\sin(e^{\cos^{-1} x})e^{\cos^{-1} x}}{\sqrt{1-x^2}}\,dx =$

16. Let $f''(x) = 3x + 1$ and $f'(1) = 2$ and $f(3) = 4$. Find $f(x)$.