

Find $f'(x)$

1. $f(x) = \tan^{-1} \sqrt{x}$

2. $f(x) = x^2 \tan^{-1} x$

3. $f'(x) = 3 \cos^{-1} \left(\frac{x}{2} \right)$

4. $f'(x) = \frac{\sin^{-1}(3x)}{x}$

Find each integral

1. $\int (\sec x - \tan x) dx$

2. $\int \frac{1}{\cos^2 2x} dx$

3. $\int \frac{\sec x \tan x}{\sec x - 1} dx$

4. $\int \frac{7}{16+x^2} dx$

5. $\int \frac{1}{x\sqrt{4x^2-1}} dx$

6. $\int \frac{1}{\sqrt{1-(x+1)^2}} dx$

7. $\int \frac{x}{x^4+2x^2+2} dx$

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

9. $\int \frac{x}{\sqrt{9+8x^2-x^4}} dx$