

Work the following on notebook paper.

Find the derivative.

1.  $f(x) = 3 \arcsin(5x)$

2.  $y = \arccos(2x^3)$

3.  $g(x) = \operatorname{arcsec}(3x)$

4.  $f(x) = \arctan\left(\frac{x}{5}\right)$

5.  $y = \frac{\arcsin(2x)}{x}$

6.  $h(x) = x^2 \arctan(x^2)$

7.  $p(x) = \cos(\arcsin x)$

8.  $q(x) = \sec(\arctan x)$

Evaluate.

9.  $\int \frac{dx}{\sqrt{25-x^2}}$

13.  $\int \frac{dx}{x^2-6x+34}$

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

14.  $\int \frac{dx}{\sqrt{8-2x-x^2}}$

11.  $\int \frac{dx}{x\sqrt{x^2-9}}$

15.  $\int \frac{2x+7}{x^2+4x+13} dx$

12.  $\int \frac{x+3}{\sqrt{16-x^2}} dx$

16.  $\int \frac{3-2x}{\sqrt{10x-x^2-9}} dx$

17. Let  $R$  be the region bounded by the graph of  $f(x) = \frac{1}{x^2+4}$  and the  $x$ -axis on the interval  $[0, 2]$ .

(a) Find the area of  $R$ .

(b) Find the volume of the solid formed when  $R$  is revolved about the  $y$ -axis.

Derive the following formulas.

18.  $\frac{d}{dx}[\arcsin u]$

20.  $\frac{d}{dx}[\arctan u]$

19.  $\frac{d}{dx}[\arccos u]$

21.  $\frac{d}{dx}[\operatorname{arcsec} u]$