Calculus

The Classic Edition

Swokowski

FORMULAS FOR DERIVATIVES

1 $D_x c = 0$

2 $D_x (u + v) = D_x u + D_x v$

3 $D_x (uv) = u D_x v + v D_x u$

4 $D_x \left(\frac{u}{v}\right) = \frac{v D_x u - u D_x v}{v^2}$

5 $D_x f(g(x)) = f'(g(x))g'(x)$

6 $D_x u^n = nu^{n-1} D_x u$

7 $D_x e^u = e^u D_x u$

8 $D_x a^u = a^u \ln a \, D_x u$

9 $D_x \ln |u| = \frac{1}{u} D_x u$

10 $D_x \log_a |u| = \frac{1}{u \ln a} D_x u$

11 $D_x \sin u = \cos u \, D_x u$

12 $D_x \cos u = -\sin u \, D_x u$

13 $D_x \tan u = \sec^2 u \, D_x u$

14 $D_x \cot u = -\csc^2 u \, D_x u$

15 $D_x \sec u = \sec u \tan u \, D_x u$

16 $D_x \csc u = -\csc u \cot u \, D_x u$

17 $D_x \sin^{-1} u = \frac{1}{\sqrt{1 - u^2}} D_x u$

18 $D_x \cos^{-1} u = \frac{-1}{\sqrt{1 - u^2}} D_x u$

19 $D_x \tan^{-1} u = \frac{1}{1 + u^2} D_x u$

20 $D_x \sec^{-1} u = \frac{1}{u\sqrt{u^2 - 1}} D_x u$

FORMULAS FOR INTEGRALS

1 $\int u \, dv = uv - \int v \, du$

2 $\int u^n \, du = \frac{1}{n+1} u^{n+1} + C, \; n \neq -1$

3 $\int \frac{1}{u} \, du = \ln |u| + C$

4 $\int e^u \, du = e^u + C$

5 $\int a^u \, du = \frac{1}{\ln a} a^u + C$

6 $\int \sin u \, du = -\cos u + C$

7 $\int \cos u \, du = \sin u + C$

8 $\int \sec^2 u \, du = \tan u + C$

9 $\int \csc^2 u \, du = -\cot u + C$

10 $\int \sec u \tan u \, du = \sec u + C$

11 $\int \csc u \cot u \, du = -\csc u + C$

12 $\int \tan u \, du = -\ln |\cos u| + C$

13 $\int \cot u \, du = \ln |\sin u| + C$

14 $\int \sec u \, du = \ln |\sec u + \tan u| + C$

15 $\int \csc u \, du = \ln |\csc u - \cot u| + C$

16 $\int \frac{1}{\sqrt{a^2 - u^2}} \, du = \sin^{-1} \frac{u}{a} + C$

17 $\int \frac{1}{a^2 + u^2} \, du = \frac{1}{a} \tan^{-1} \frac{u}{a} + C$

18 $\int \frac{1}{u\sqrt{u^2 - a^2}} \, du = \frac{1}{a} \sec^{-1} \frac{u}{a} + C$

19 $\int \frac{1}{a^2 - u^2} \, du = \frac{1}{2a} \ln \left| \frac{u + a}{u - a} \right| + C$

20 $\int \frac{1}{\sqrt{u^2 - a^2}} \, du = \ln |u + \sqrt{u^2 - a^2}| + C$

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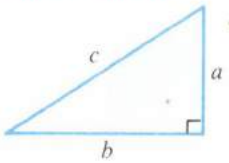
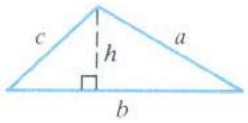
Area A; circumference C; volume V; curved surface area S; altitude h

RIGHT TRIANGLE



Pythagorean Theorem: $c^2 = a^2 + b^2$

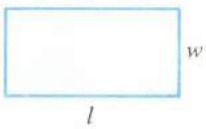
TRIANGLE



$A = \frac{1}{2}bh \qquad C = a + b + c$

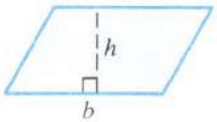
$h = \frac{\sqrt{3}}{2}s \qquad A = \frac{\sqrt{3}}{4}s^2$

RECTANGLE



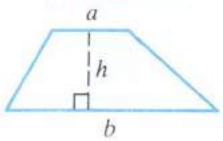
$A = lw \qquad C = 2l + 2w$

PARALLELOGRAM



$A = bh$

TRAPEZOID



$A = \frac{1}{2}(a + b)h$

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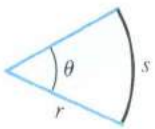
CIRCLE

$A = \pi r^2 \qquad C = 2\pi r$

CIRCULAR SECTOR

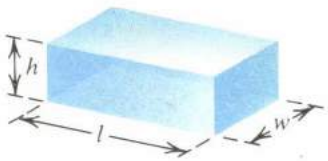


$A = \frac{1}{2}r^2\theta \qquad s = r\theta$

CIRCULAR RING

$A = \pi(R^2 - r^2)$

RECTANGULAR BOX

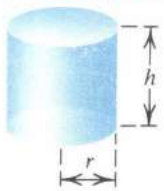


$V = lwh \qquad S = 2(hl + lw + hw)$

SPHERE

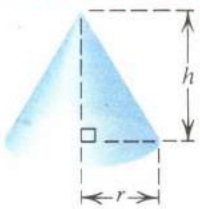
$V = \frac{4}{3}\pi r^3 \qquad S = 4\pi r^2$

RIGHT CIRCULAR CYLINDER



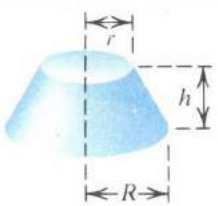
$V = \pi r^2 h \qquad S = 2\pi rh$

RIGHT CIRCULAR CONE



$V = \frac{1}{3}\pi r^2 h \qquad S = \pi r\sqrt{r^2 + h^2}$

FRUSTUM OF A CONE



$V = \frac{1}{3}\pi h(r^2 + rR + R^2)$

PRISM

$V = Bh$ with B the area of the base

CALCULUS

CALCULUS

FIFTH EDITION

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Dedicated to the memory of
my mother and father,
Sophia and John Swokowski

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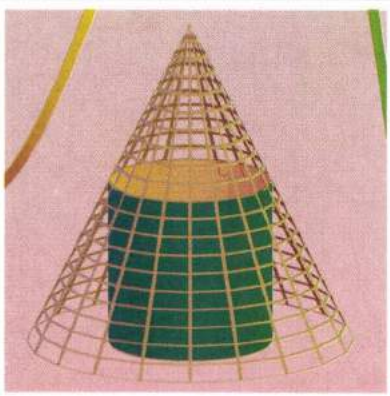

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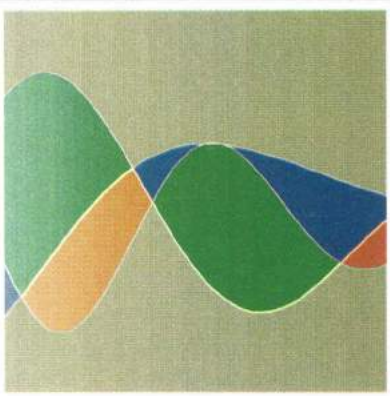

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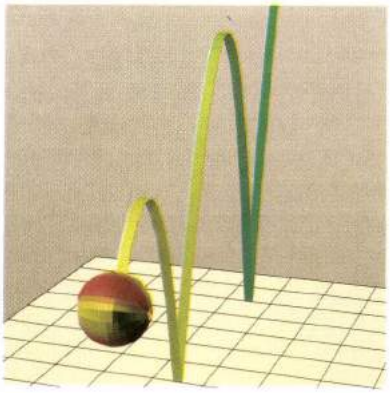

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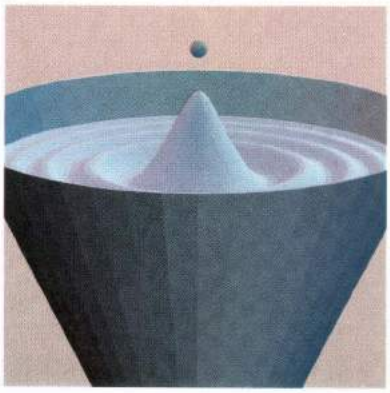

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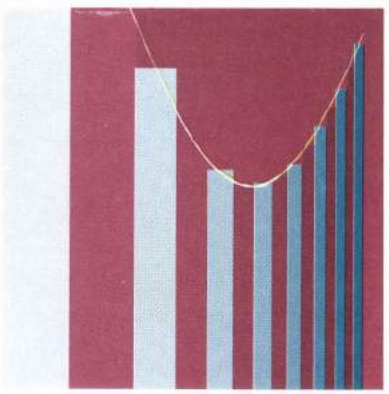

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