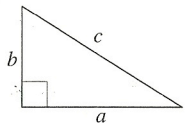
GEOMETRY

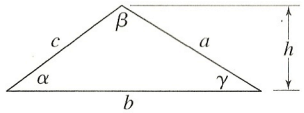


Triangles

Pythagorean Theorem

$a^2 + b^2 = c^2$

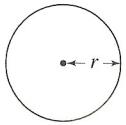
Right triangle



Angles $\alpha + \beta + \gamma = 180°$

Area $A = \frac{1}{2}bh$

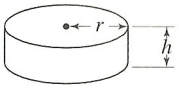
Any triangle



Circles

Circumference $C = 2\pi r$

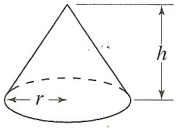
Area $A = \pi r^2$



Cylinders

Surface area $S = 2\pi r^2 + 2\pi rh$

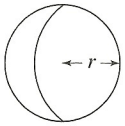
Volume $V = \pi r^2 h$



Cones

Surface area $S = \pi r^2 + \pi r\sqrt{r^2 + h^2}$

Volume $V = \frac{1}{3}\pi r^2 h$



Spheres

Surface area $S = 4\pi r^2$

Volume $V = \frac{4}{3}\pi r^3$

CONVERSIONS

1 inch = 2.54 centimeters	1 kilometer = 0.62 miles
1 liter = 1000 cubic centimeters	1 liter = 1.057 quarts
1 kilogram = 2.20 pounds	1 pound = 453.6 grams
π radians = 180 degrees	1 cubic foot = 7.48 gallons

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

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Formula Card
to accompany
CALCULUS, 8/E
Varberg, Purcell, and Rigdon

DERIVATIVES

$D_x x^r = rx^{r-1}$

$D_x|x| = \frac{|x|}{x}$

$D_x \sin x = \cos x$

$D_x \cos x = -\sin x$

$D_x \tan x = \sec^2 x$

$D_x \cot x = -\csc^2 x$

$D_x \sec x = \sec x \tan x$

$D_x \csc x = -\csc x \cot x$

$D_x \sinh x = \cosh x$

$D_x \coth x = -\text{csch}^2 x$

$D_x \cosh x = \sinh x$

$D_x \operatorname{sech} x = -\operatorname{sech} x \tanh x$

$D_x \tanh x = \operatorname{sech}^2 x$

$D_x \operatorname{csch} x = -\operatorname{csch} x \coth x$

$D_x \ln x = \frac{1}{x}$

$D_x \log_a x = \frac{1}{x \ln a}$

$D_x e^x = e^x$

$D_x a^x = a^x \ln a$

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

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

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

$D_x \sec^{-1} x = \frac{1}{|x|\sqrt{x^2 - 1}}$