

Math 2303
Formulas

I. Perimeter, Area and Volume formulas

Square: $P = 4s$
 $A = s^2$

Rectangle: $P = 2l + 2w$
 $A = lw$

Parallelogram: $A = bh$

Trapezoid: $A = \frac{1}{2}(b_1 + b_2)h$

Triangle: $A = \frac{1}{2}bh$

Circle: $C = 2\pi r$
 $A = \pi r^2$

Closed Box: $A = 2lw + 2lh + 2wh$
 $V = lwh$

Sphere: $A = 4\pi r^2$
 $V = \frac{4}{3}\pi r^3$

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

Cylinder: $A = 2\pi r^2 + 2\pi rh$
 $V = \pi r^2 h$

II. Exponential Growth and Decay

Growth: $P(t) = P_0 e^{kt}$

Decay: $P(t) = P_0 e^{-kt}$

III. Math of Finance

Simple interest:

$$i = prt$$

Future value (simple interest):

$$A = P(1 + rt)$$

Future value (comp. interest):

$$A = P(1 + i)^n, \text{ where } i = \frac{r}{m} \text{ and } n = mt$$

Present value (comp. interest):

$$P = A(1 + i)^{-n}, \text{ where } i = \frac{r}{m} \text{ and } n = mt$$

Future value (annuity):

$$S = R \left[\frac{(1 + i)^n - 1}{i} \right], \text{ where } i = \frac{r}{m} \text{ and } n = mt$$

Present value (annuity):

$$P = R \left[\frac{1 - (1 + i)^{-n}}{i} \right], \text{ where } i = \frac{r}{m} \text{ and } n = mt$$

Monthly payment (loan):

$$R = \frac{Pi}{1 - (1 + i)^{-n}}, \text{ where } i = \frac{r}{m} \text{ and } n = mt$$

Effective rate:

$$r_{eff} = \left(1 + \frac{r}{m} \right)^m - 1$$

Tax-free yield:

$$T_f = T_a(1 - F)$$

IV. Miscellaneous

Fahrenheit to Celsius:

$$C = \frac{5}{9}(F - 32)$$

Celsius to Fahrenheit:

$$F = \frac{9}{5}C + 32$$

Pythagorean Theorem:

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