Pre-Calculus Formula Sheet

Standard Form of an Ellipse

$$\frac{(x-h)^2}{a^2}+\frac{(y-k)^2}{b^2}=1$$

$$a^2-b^2=c^2$$

Standard Form of a Hyperbola

$$\frac{(x-h)^2}{a^2}-\frac{(y-k)^2}{b^2}=1$$

$$\frac{(y-k)^2}{a^2}-\frac{(x-h)^2}{b^2}=1$$

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

Standard Form of a Parabola

$$(y-k)^2=4p(x-h)$$

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General term of an Arithmetic Sequence

$$a_n=a_1+(n-1)d$$

Sum of an Arithmetic Sequence

$$S_n=\frac{n}{2}(a_1+a_n)$$

General term of a Geometric Sequence

$$a_n=a_1r^{n-1}$$

Sum of a Finite Geometric Series

$$S_n=\frac{a_1(1-r^n)}{1-r}$$

Sum of an Infinite Geometric Series

$$S=\frac{a_1}{1-r}\qquad |r|<1$$

Regular Interest

$$A=P\left(1+\frac{r}{n}\right)^{nt}$$

$$A=Pe^{rt}$$

Present Annuity

$$P_n=P\left[\frac{1-\left(1+\frac{r}{n}\right)^{-nt}}{\frac{r}{n}}\right]$$

Future Annuity

$$F_n=P\left[\frac{\left(1+\frac{r}{n}\right)^{nt}-1}{\frac{r}{n}}\right]$$