Honors Algebra 2 B Formulas

Compound Interest:

Continuously: $A = Pe^{rt}$ n times per year: $A = P\left(1+\frac{r}{n}\right)^{nt}$

Arithmetic Sequence and Series:

$$a_n = a_1 + (n-1)d \qquad S_n = n\left(\frac{a_1 + a_n}{2}\right) = n\left(\frac{2a_1 + (n-1)d}{2}\right)$$

Geometric Sequence and Series:

$$a_n = a_1 r^{n-1} \qquad S_n = a_1\left(\frac{1-r^n}{1-r}\right)$$

Conic Sections:

Circle	$(x-h)^2 + (y-k)^2 = r^2$ Center (h,k) radius r
Parabola	$(x-h)^2 = 4p(y-k)$ or $y-k = \frac{1}{4p}(x-h)^2$ opens up if $p>0$, opens down if $p<0$ Vertex (h,k) $(y-k)^2 = 4p(x-h)$ or $x-h = \frac{1}{4p}(y-k)^2$ opens right if $p>0$, opens left if $p<0$ Vertex (h,k) p is the distance from the vertex to the focus or vertex to the directrix
Ellipse	$\frac{(x-h)^2}{a^2} + \frac{(y-k)^2}{b^2} = 1$ major axis horizontal Center (h,k) $a > b$ $\frac{(x-h)^2}{b^2} + \frac{(y-k)^2}{a^2} = 1$ major axis vertical Center (h,k) $a > b$ a = center to vertex, c = center to focus $c^2 = a^2 - b^2$
Hyperbola	$\frac{(x-h)^2}{a^2} - \frac{(y-k)^2}{b^2} = 1$ transverse axis horizontal Center (h,k) $\frac{(y-k)^2}{a^2} - \frac{(x-h)^2}{b^2} = 1$ transverse axis vertical Center (h,k) a = center to vertex c = center to focus $c^2 = a^2 + b^2$