AFM Unit 1: Exponents and Logarithms Formula Sheet

Domain	Lowest x, highest x use (or) if not included, [or] if included
Range	Lowest y, highest y use (or) if not included, [or] if included
Transformations: a	| a | > 1 vertical stretch 0 < | a | < 1 vertical shrink a < 0 reflect over x-axis
Transformations: c	| c | > 1 horizontal shrink 0 < | c | < 1 horizontal stretch a < 0 reflect over y-axis
Transformations: h	h > 0 (x – h) shift right h units h < 0 (x + h) shift left h units If vertical asymptote, x = h
Transformations: k	k > 0 shift up h units k < 0 shift down h units If horizontal asymptote, y = k
Convert to logarithmic form: $y = b^x$	$\log_b(y) = x$
Convert to exponential form: $\log_b(y) = x$	$y = b^x$
Compound Interest over time	$A = P\left(1 + \frac{r}{n}\right)^{nt}$
Continuous Interest	$A = Pe^{rt}$
Logarithmic properties involving 1	$log_b(b) = 1$ $log_b(1) = 0$
Inverse properties of logarithms and exponents	$log_b(b^x) = x$ $b^{log_b(x)} = x$
Product Rule of Logarithms	$log_b(MN) = log_b(M) + log_b(N)$
Quotient Rule of Logarithms	$log_b\left(\frac{M}{N}\right) = log_b(M) - log_b(M)$
Power Rule of Logarithms	$log_b(M^p) = p\ log_b(M)$
Change of Base Formula for Logarithms	$log_b(M) = \frac{log_a(M)}{log_a(b)}$
Logistic Growth Model	$f(t) = \frac{c}{1+ae^{-bt}}$