College Algebra **Important Formulas & Facts**

Linear Functions & Relations

Slope-intercept form $y = f(x) = mx + b$

Standard form $Ax + By = C$

Point-slope form $y - y_1 = m(x - x_1)$

Slope formula: $m = \dfrac{y_2 - y_1}{x_2 - x_1}$

Standard Equation of a Circle $(x - h)^2 + (y - k)^2 = r^2$ Center (h, k); radius r

Distance Formula from P_1 (x_1, y_1) to P_2 (x_2, y_2)

$$d(P_1, P_2) = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Quadratic Functions

Standard form $y = f(x) = ax^2 + bx + c$

Vertex form $y = a(x - h)^2 + k$

The Quadratic Formula

The solutions of $ax^2 + bx + c = 0$, $a \neq 0$ are given by

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}.$$

Compound Interest Formulas: $A = P\left(1 + \dfrac{r}{n}\right)^{n \cdot t}$ $A = Pe^{rt}$

A = accumulated amount, P = Principal, r = annual interest rate, t = number of years, n = number of annual compoundings

Laws of Exponents

$a^s \cdot a^t = a^{s+t}$ $\quad (a^s)^t = a^{s \cdot t}$ $\quad (ab)^s = a^s \cdot b^s$

$1^s = 1$ $\quad a^{-s} = \dfrac{1}{a^s} = \left(\dfrac{1}{a}\right)^s$ $\quad a^0 = 1$

Properties for Logarithms

1. $\log_a(M \cdot N) = \log_a M + \log_a N$	4. $\log_a M = \dfrac{\log M}{\log a} = \dfrac{\ln M}{\ln a}$
2. $\log_a\left(\dfrac{M}{N}\right) = \log_a M - \log_a N$	5. $a^r = e^{r \ln a}$
3. $\log_a M^r = r \log_a M$	

Do your best! Rise to the challenge! Live and learn!