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:	$m = \frac{y_2 - y_1}{x_2 - x_1}$
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	$y = f(x) = a(x - h)^2 + k$

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

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

Laws of Exponents

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

$$a^{-s} = \frac{1}{a^s} = \left(\frac{1}{a}\right)^s \qquad 1^s = 1 \qquad a^0 = 1$$

Properties for Logarithms

1. $\log_a(M \cdot N) = \log_a M + \log_a N$	4. $\log_a M = \frac{\log M}{\log a} = \frac{\ln M}{\ln a}$
2. $\log_a\left(\frac{M}{N}\right) = \log_a M - \log_a N$	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!