

# Math 20-1 Formula Sheet

## Sequences and Series

$$t_n = t_1 + (n - 1)d$$

$$S_n = \frac{n}{2} [2t_1 + (n - 1)d]$$

$$S_n = \frac{n}{2} (t_1 + t_n)$$

$$t_n = t_1 r^{n-1}$$

$$S_n = \frac{t_1 (r^n - 1)}{r - 1}, r \neq 1$$

$$S_n = \frac{rt_n - t_1}{r - 1}, r \neq 1$$

$$S_\infty = \frac{t_1}{1 - r}, r \neq 1$$

## Trigonometry

$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$$

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$c^2 = a^2 + b^2 - 2ab \cdot \cos C$$

$$\cos C = \frac{a^2 + b^2 - c^2}{2ab}$$

## Quadratic Functions

$$y = a(x - p)^2 + q$$

$$y = ax^2 + bx + c$$

## Quadratic Equations

Given  $ax^2 + bx + c = 0$ ,  $a \neq 0$  then

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

## Exponent Laws

$$a^m \cdot a^n = a^{m+n}$$

$$a^m \div a^n = a^{m-n}, a \neq 0$$

$$(a^m)^n = a^{mn}$$

$$(ab)^m = a^m b^m$$

$$\left(\frac{a}{b}\right)^m = \frac{a^m}{b^m}, b \neq 0$$

$$a^{-n} = \frac{1}{a^n}, a \neq 0$$

$$a^{\frac{1}{n}} = \sqrt[n]{a}$$

$$a^{\frac{m}{n}} = \sqrt[n]{a^m} \quad \text{or} \quad \left(\sqrt[n]{a}\right)^m$$

## Radicals

$$\left(m \sqrt[k]{a}\right) \left(n \sqrt[k]{b}\right) = mn \sqrt[k]{ab}$$

$$\frac{m \sqrt[k]{a}}{n \sqrt[k]{b}} = \frac{m}{n} \sqrt[k]{\frac{a}{b}}$$

## Fractions

$$\frac{a}{b} + \frac{c}{d} = \frac{ad + bc}{bd}$$

$$\frac{a}{b} \cdot \frac{c}{d} = \frac{ac}{bd}$$

$$\frac{\frac{a}{b}}{\frac{c}{d}} = \frac{a}{b} \cdot \frac{d}{c}$$