

Unofficial Partial List of Math B Formulas

This is a list of most of the formulas that you must memorize before taking the Math B Regents Exam. There are some formulas that are not included in the table below. You must also know all the formulas from Math A.

<p>Quadratic Formula</p> $x = \frac{-b}{2a} \pm \frac{\sqrt{b^2 - 4ac}}{2a}$	<p>Circle with Center (h,k) and radius r</p> $(x - h)^2 + (y - k)^2 = r^2$	<p>Ellipse with Center (h, k)</p> $a^2 (x - h)^2 + b^2 (y - k)^2 = a^2 b^2$
<p>Hyperbola with Center (h, k)</p> $a^2 (x - h)^2 - b^2 (y - k)^2 = a^2 b^2$	<p>Equilateral Hyperbola Inverse Variation $xy = k$</p>	<p>Summation Notation</p> $\sum_{k=3}^6 k^2 = 3^2 + 4^2 + 5^2 + 6^2$
<p>Transformation Formulas</p> <p>$R_{0, 90}$ rotate from 0^0 to 90^0 counter clockwise</p> <p>$r_{x\text{-axis}}$ reflect in the x-axis</p> <p>$T_{8, -5}$ translate by vector (8, -5)</p> <p>D_3 dilate by scale factor 3</p>	<p>Arc Length and Radians</p> $\text{arc length} = \frac{n}{360} 2\pi r$ $1 \text{ radian} = \frac{180}{\pi} \text{ degrees}$ $1 \text{ degree} = \frac{\pi}{180} \text{ radians}$	<p>Trig Graphs $y = a \sin(bx)$</p> <p>a = amplitude</p> <p>b = frequency (number of complete curves in 360^0)</p> <p>period = $\frac{360}{b}$ (number of degrees for one complete curve)</p>
<p>Trig Identities</p> $\sin^2 x + \cos^2 x = 1$ $\tan x = \frac{\sin x}{\cos x} \quad \csc x = \frac{1}{\sin x}$ $\sec x = \frac{1}{\cos x} \quad \tan x = \frac{1}{\cot x}$ <p>$\sin x = \cos(90 - x)$ plus related formulas</p>	<p>In a right triangle with legs a and b; hypotenuse = c, altitude to side c = h; projection of b on c = x; projection of a on c = y:</p> <p>Three Pythagorean Theorem equations plus:</p> $h^2 = xy, \quad b^2 = xc, \quad a^2 = yc$	<p>Circle Segments</p> <p>Two chords intersecting inside circle: $ab = cd$ where a and b are measures of the segments of one chord and c and d are measures of the segments of the other chord.</p> <p>Two secants: $ab = cd$ where a and c are measures of the external segments and b and d are measures of the whole secants.</p> <p>Secant and a tangent: $t^2 = ab$ where t is the measure of the tangent, b is the measure of the whole secant, and a is the measure of the external segment of the secant.</p>
<p>Circle Angles:</p> <p>measure of central angle = measure of intercepted arc</p> <p>measure of an angle with vertex on circle = = 0.5* measure of intercepted arc</p> <p>measure of an angle with vertex inside circle = 0.5*sum of measures of intercepted arcs</p> <p>measure of an angle with vertex outside circle = 0.5*difference of measures of intercepted arcs</p>	<p>Statistics and Probability:</p> <p>\bar{x} = mean</p> <p>s_x = sample standard deviation</p> <p>σ_x = population standard deviation</p> <p>$p(r \text{ successes in } n \text{ trials}) = {}_n C_r p^r q^{n-r}$</p> <p>p = probability of success q = probability of failure</p>	<p>Exponents and Logarithms</p> $a^x a^y = a^{x+y} \quad \frac{a^x}{a^y} = a^{x-y} \quad (a^x)^y = a^{xy}$ $a^{\frac{x}{y}} = \sqrt[y]{a^x} = (\sqrt[y]{a})^x \quad a^0 = 1 \quad \left(\frac{a}{b}\right)^{-1} = \frac{b}{a}$ <p>$\log_b a = x \iff b^x = a$</p> <p>$\log ab = \log a + \log b \quad \log\left(\frac{a}{b}\right) = \log a - \log b$</p> <p>$\log(a^n) = n \log a \quad \log_b a = \frac{\log a}{\log b}$</p>