STAAR ALGEBRA II REFERENCE MATERIALS

STAAR State of Texas Assessments of Academic Readiness

GENERAL FORMULAS

Slope of a line	$m = \frac{y_2 - y_1}{x_2 - x_1}$
Quadratic formula	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

FACTORING

Difference of squares	$a^2 - b^2 = (a - b)(a + b)$
Difference of cubes	$a^3 - b^3 = (a - b)(a^2 + ab + b^2)$
Sum of cubes	$a^3 + b^3 = (a + b)(a^2 - ab + b^2)$

LOGARITHMS

Product	$\log_b(xy) = \log_b x + \log_b y$
Quotient	$\log_b\left(\frac{x}{y}\right) = \log_b x - \log_b y$
Power	$\log_b(x^r) = r \log_b x$

CONIC SECTIONS

General form	$Ax^2 + Bxy + Cy^2 + Dx + Ey + F = 0$	
Circle	$(x - h)^2 + (y - k)^2 = r^2$	
Parabola	$(x - h)^2 = 4p(y - k)$	$(y - k)^2 = 4p(x - h)$
Ellipse	$\frac{(x - h)^2}{a^2} + \frac{(y - k)^2}{b^2} = 1$	$\frac{(y - k)^2}{a^2} + \frac{(x - h)^2}{b^2} = 1$
Hyperbola	$\frac{(x - h)^2}{a^2} - \frac{(y - k)^2}{b^2} = 1$	$\frac{(y - k)^2}{a^2} - \frac{(x - h)^2}{b^2} = 1$

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CIRCUMFERENCE

Circle	$C = 2\pi r$	or	$C = \pi d$

AREA

Triangle	$A = \frac{1}{2}bh$
Rectangle or parallelogram	$A = bh$
Rhombus	$A = \frac{1}{2}d_1d_2$
Trapezoid	$A = \frac{1}{2}(b_1 + b_2)h$
Regular polygon	$A = \frac{1}{2}aP$
Circle	$A = \pi r^2$

SURFACE AREA

	Lateral	Total
Prism	$S = Ph$	$S = Ph + 2B$
Pyramid	$S = \frac{1}{2}Pl$	$S = \frac{1}{2}Pl + B$
Cylinder	$S = 2\pi rh$	$S = 2\pi rh + 2\pi r^2$
Cone	$S = \pi rl$	$S = \pi rl + \pi r^2$
Sphere		$S = 4\pi r^2$

VOLUME

Prism or cylinder	$V = Bh$
Pyramid or cone	$V = \frac{1}{3}Bh$
Sphere	$V = \frac{4}{3}\pi r^3$