Intermediate Algebra Formulas Quiz 2 – Use This to Study

Some factoring formulas:

Sum of Cubes $\boxed{a^3 + b^3 = (a+b)(a^2 - ab + b^2)}$

Difference of Cubes $\boxed{a^3 - b^3 = (a-b)(a^2 + ab + b^2)}$

Difference of Squares $\boxed{a^2 - b^2 = (a+b)(a-b)}$

Some work times formulas:

Two laborers:

$$\boxed{\frac{1}{x} = \frac{1}{a} + \frac{1}{b}}$$

Three laborers:

$$\boxed{\frac{1}{x} = \frac{1}{a} + \frac{1}{b} + \frac{1}{c}}$$

When something moves a distance d at rate r for time t, then $\boxed{d = rt}$

When simplifying a radical: If your variable could be $\boxed{\text{negative}}$ and the index of the radical is $\boxed{\text{even}}$ the result must be placed in $\boxed{\text{absolute value bars}}$

If n is a positive integer greater than 1 and $\sqrt[n]{a}$ is a real number, then $a^{1/n} = \boxed{\sqrt[n]{a}}$

If m and n are positive integers greater than 1 with $\frac{m}{n}$ in simplest form, then $a^{m/n} = \boxed{\sqrt[n]{a^m}} = \boxed{\left(\sqrt[n]{a}\right)^m}$

As long as $a^{m/n}$ is a nonzero real number, $a^{-m/n} = \boxed{\frac{1}{a^{m/n}}}$

The Product Rule for Radicals: If $\sqrt[n]{a}$ and $\sqrt[n]{b}$ are real numbers, then $\boxed{\sqrt[n]{a} \cdot \sqrt[n]{b} = \sqrt[n]{ab}}$

The Quotient Rule for Radicals: If $\sqrt[n]{a}$ and $\sqrt[n]{b}$ are real numbers, and $\sqrt[n]{b}$ is not zero, then $\boxed{\frac{\sqrt[n]{a}}{\sqrt[n]{b}} = \sqrt[n]{\frac{a}{b}}}$

The distance between two points, (x_1, y_1) and (x_2, y_2), is $d = \boxed{\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}}$

The midpoint of the line segment whose endpoints are (x_1, y_1) and (x_2, y_2) is the point with coordinates $\boxed{\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)}$

The Pythagorean Theorem: If a and b are the legs of a right triangle, and c is its hypotenuse, then $\boxed{a^2 + b^2 = c^2}$

The imaginary unit, written i, is the number whose square is -1. That is, $i^2 = \boxed{-1}$ and $i = \boxed{\sqrt{-1}}$

If a is a positive number, then $\sqrt{-a} = \boxed{i \cdot \sqrt{a}}$

The Square Root Property: If X is any algebraic expression, c is a real number, and $X^2 = c$, then $\boxed{X = \pm\sqrt{c}}$

The Quadratic Formula: If $\boxed{ax^2 + bx + c = 0}$ then $\boxed{x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}}$ and its discriminant $\boxed{b^2 - 4ac}$ tells the quantity and type of solution(s).

Given the parabola $y = f(x) = ax^2 + bx + c$, its vertex is the point $\boxed{\left(\frac{-b}{2a}, c - \frac{b^2}{4a}\right)}$