College Algebra Formulas Quiz 1 – Answers

Some equation forms of a line:

Slope-Intercept FormPoint-Slope FormStandard/General Form
$$y = mx + b$$
 $y - y_1 = m(x - x_1)$ $Ax + By = C$

Some equation forms of a circle:

<u>Standard Form</u> $(x-h)^2 + (y-k)^2 = r^2$

General Form $x^2 + y^2 + ax + by + c = 0$

Given a line passing through points (x_1, y_1) and (x_2, y_2) , the slope *m* of the line is *m* = rise run as long as $x_2 \neq x_1$

f(b)-f(a)The average rate of change of a function from a to b is b-a

Some equation forms of a parabola:

<u>Vertex Form</u>

Vertex FormStandard Form
$$y = a(x-h)^2 + k$$
 $y = ax^2 + bx + c$, with vertex $\left(-\frac{b}{2a}, c - \frac{b^2}{4a}\right)$

	Horizontal Shift		Vertical Shift	
HORIZONTAL TRANSFORMATIONS	How does the graph change?	It shifts <u>/eff</u> or <u>right</u>	How does the graph change?	It shifts UP
	How does the eq'n change?	Replace all x with $(\chi - h)$ where h tells the direction of shift	How does the eq'n change?	Add \underline{K} to the equation
	Which coord's change? How?	Add \underline{h} to all the χ -coordinates	Which coord's change? How?	Add \underline{K} to all the $\underline{\mathcal{Y}}$ -coordinates
	Horizontal Compression		Vertical Compression	
	How does the graph change?	It compresses towards the <u>भ</u> - axis	How does the graph change?	It compresses towards the \underline{X} -axis
	How does the eq'n change?	Replace all x with $(\alpha \chi)$ where $\alpha > 1$	How does the eq'n change?	Multiply the equation by \underline{a} , with $0 < \underline{a} < \underline{1}$
	Which coord's change? How?	Multiply all of the $\underline{\chi}$ -coordinates by reciprocal of a	Which coord's change? How?	Multiply all of the <u>y</u> -coordinates by <u>a</u>
	Horizontal Stretch		Vertical Stretch	
	How does the graph change?	It stretches away from the <u></u> -axis	How does the graph change?	It stretches away from the χ -axis
	How does the eq'n change?	Replace all x with $(a x)$ where $0 < a < 1$	How does the eq'n change?	Multiply the equation by \underline{a} , with $\underline{a} > 1$
	Which coord's change? How?	Multiply all of the χ -coordinates by <u>reciprocal</u> of a	Which coord's change? How?	Multiply all of the <u>y</u> -coordinates by <u>a</u>
	Horizontal (y-axis) Reflection		Vertical (x-axis) Reflection	
	How does the graph change?	Spin it around the <u>y</u> -axis	How does the graph change?	Spin it around the <u>X</u> -axis
	How does the eq'n change?	Replace all x with $(-x)$	How does the eq'n change?	Multiply the equation by1
	Which coord's change? How?	Multiply all of the $\underline{\chi}$ -coordinates by $\underline{-1}$	Which coord's change? How?	Multiply all of the <u>3</u> -coordinates by -1

Graphing Techniques: Transformations -- Characteristics Worksheet