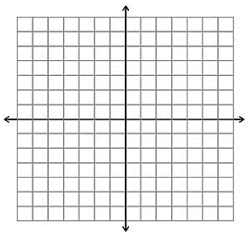
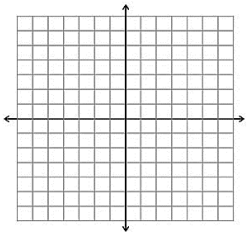
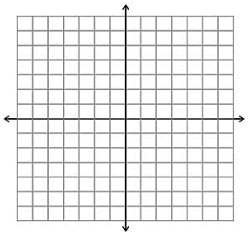
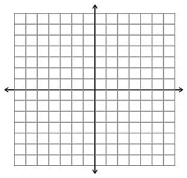
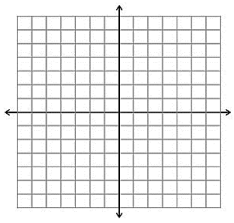
HONORS PRECALC LEARNING TARGET **1st Semester** STUDY GUIDE SHEET Name: _____

1.1 – write equations for lines from 2 pts and parallel or perpendicular	1.2 – interpret and evaluate with function notation	1.3ab – determine the domain and range of a function
1.3c – graph piecewise functions 	1.4 – graph using function transformations 	1.5 – evaluate function combinations and compositions $f(x)=x^2+3x$ $g(x)=2x-1$ • $f-g=(x^2+3x)-(2x-1)=x^2+3x-2x+1$ $=x^2+x+1$ • $fg=(x^2+3x)(2x-1)=2x^3-x^2+6x^2-3x$ $2x^3+5x^2-3x$ • $g(f(x))=g(x^2+3x)=2(x^2+3x)-1$ $=2x^2+6x-1$
1.6 – find the inverse function and its graph 	2.1 – graph and write quadratics in vertex form 	2.2 – graph polynomials in factored form
2.3a – factor polynomials through long or synthetic division	2.3b – use Rational Zero/Root Test to list all possible rational roots for a polynomial When factoring to solve, the solutions are of the form $x=\frac{\text{factor of constant term}}{\text{factor of leading coefficient}}$ Ex: List all possible x-ints for $y=x^3-4x^2+5x-2$ $x=\frac{\pm1,\pm2}{\pm1}=\pm1,\pm2$	2.4a – do arithmetic with complex numbers $(3-5i)+(4+i)-(6-8i)$ $(7-4i)-(6-8i)$ $(7-4i)+(-6+8i)=1+4i$ $\frac{(4+i)}{(5-3i)}\cdot\frac{(5+3i)}{(5+3i)}=\frac{20+12i+5i+3i^2}{25+15i-15i-9i^2}$ $i=\sqrt{-1}$ $i^2=-1$ $=\frac{20+17i-3}{25+9}=\frac{17+17i}{34}=\frac{1}{2}+\frac{1}{2}i$
2.4b – solve equations with complex answers $3x^2-2x+5=0$ (a, b, c) $x=\frac{-b\pm\sqrt{b^2-4ac}}{2a}$ $x=\frac{2\pm\sqrt{4-4(3)(5)}}{6}$ $x=\frac{2\pm\sqrt{-56}}{6}=\frac{2\pm i\sqrt{56}}{6}=\frac{2\pm i\sqrt{4}\sqrt{14}}{6}$ $\frac{1\pm i\sqrt{14}}{3}$ $\frac{2\pm 2i\sqrt{14}}{6}$	2.5 – write equations for polynomials (no complex roots)	2.6 – identify asymptotes and intercepts of rational functions

2.7 – graph rational functions 	3.1a – graph exponential functions	3.1b – compute compounding exponential value problems
3.2a – evaluate logs based on definition	3.2b – graph logs and understand connection to exponential graphs	3.3 – simplify log expressions $\log\left(\frac{x^3}{y^2}\right) = \log(x^3) - \log(y^2)$ $3\log(x) - 2\log(y)$ $\frac{1}{2}\log(x) + 5\log(y)$ $\log(x^{1/2}) + \log(y^5)$ $\log(x^{1/2} \cdot y^5) = \log(\sqrt{x} \cdot y^5)$
3.4 – solve log and exponential equations	3.5 – write real-world exponential equations	4.1 – convert between radians and degrees and graph angles
4.2 – find trig values on unit circle	4.3ac – solve triangle problems using trig	4.3b – prove using basic trig identities $\csc\theta \cdot \tan\theta = \sec\theta$ $\frac{1}{\sin\theta} \cdot \frac{\sin\theta}{\cos\theta} = \sec\theta$ $\frac{1}{\cos\theta} = \sec\theta$ $\sec\theta = \sec\theta$ ✓ $\cot\theta \cdot \sin\theta = \cos\theta$ $\frac{1}{\tan\theta} \cdot \sin\theta = \cos\theta$ $\frac{\cos\theta}{\sin\theta} \cdot \frac{\sin\theta}{1} = \cos\theta$ $\cos\theta = \cos\theta$ ✓
4.4 – given one trig value on circle (and the quadrant) find others	Use this space for anything else you feel you need on your sheet.	