Math 1A Winter 2018 Ch. 1 Review 50 pts Name _____

Show all appropriate work. Solutions are to be *algebraic*, not *graphic*. All answers are to be EXACT – NO DECIMALS– if at all possible. Use back of page for more space, if needed.

For # 1 – 2 Using only algebra, solve the following inequalities. *Then* graph their *solution(s)* .

1. $14x^2 - 29x > -12$

2. $|8 + 13x| \leq 5$

3. Find the equation of a parabola $(y = a x^2 + b x + c)$ that passes through the points $(1 , 46)$, $(2 , 84)$, and $(3 , 114)$.

4. Determine if the points $K (-7 , 2)$, $L (5 , 3)$, and $M (17 , -8)$ are collinear. There are at least two algebraic methods (2 *different* concepts) available. XC for both. (no graphing allowed).

5. Given $f(x) = 3x^2 - 7x + 9$, find $\frac{f(x+h) - f(x)}{h}$ in simplest form.

6. Find the equation of the perpendicular bisector of the line segment whose endpoints are the points $(4, -9)$ and $(-16, -49)$.

7. Find the center and radius of the circle $3x^2 + 3y^2 + 6x - 9y + 3 = 0$

8. A basic exponential function is of the form $y = A b^x$ Find the exponential equation that passes through the points $(-3, \frac{1}{432})$ and $(7, 139968)$

9. A triangle has vertices A (a , b) , B (c , d) and C (e , f). Prove –using only algebra, and in terms of a,b,c,d,e,f– that the line segment connecting the midpoint of any two sides (AB , BC , or AC) of the triangle is parallel to the third side. XC: prove the line segment is also equal to one-half the length of that third side.

10. Find the equation of the secant line passing through $y = \text{Cos}\, x$, at $x = \frac{\pi}{4}$ and $x = \frac{11\,\pi}{6}$. Be exact, no decimals.