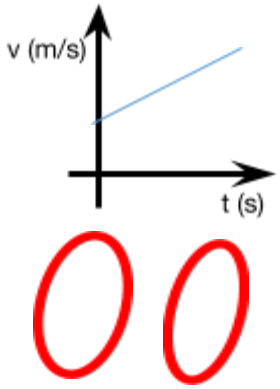
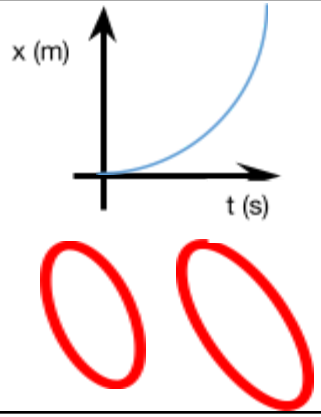
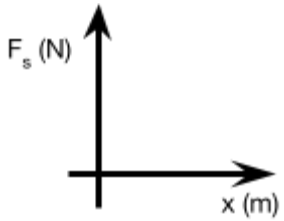
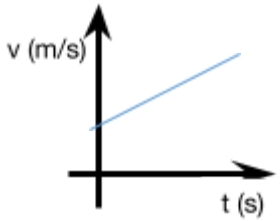
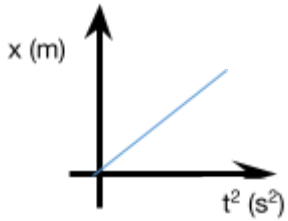
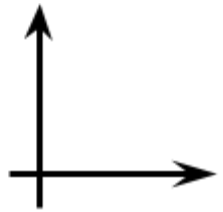
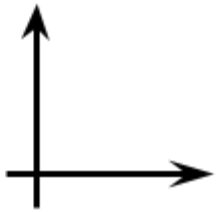
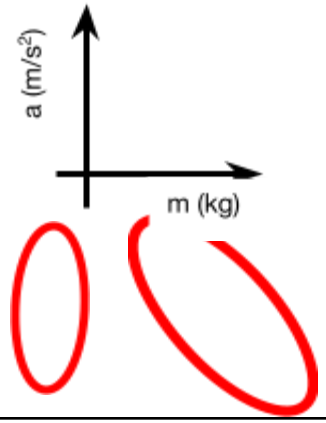
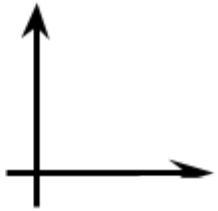
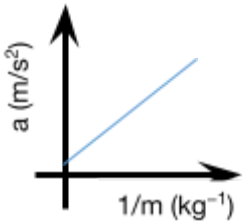
Physics Skills – Linearization 1, Known Mathematical Model **Name:**_____
AP Physics 1 **Hr:**_____ **Date:**_____

Relationship to graph	Graph relationship of speed vs time for an object with a constant acceleration	Graph relationship of position vs time for an object with a constant acceleration starting at the origin from rest	Graph the relationship between spring <u>force</u> and da stretch.
Write an equation that is true in general (often from AP Physics 1 Equation sheet)	$v_x = v_{x0} + a_x t$	$x = x_0 + v_{x0} t + \frac{1}{2} a t^2$	
Plug specific values into the general equation	N/A	$x = (0\ m) + \left(0\ \frac{m}{s}\right) t + \frac{1}{2} a t^2$ $x = \frac{1}{2} a t^2$, in this case	N/A
Identify which values are <u>constant</u> and which are variable.	Constant: Variable:	Constant: a Variable: x, t	Constant: k Variable: F_S, x
Sketch what a graph of the original data will look like			
Line up your general equation with y=mx+b. Circle *x* and the independent variable together. Circle *y* and the dependent variable together.	$y = m\,x + b$ $v = a\ t + v_0$	$y = m\,x + b$ $x = \frac{1}{2} a\ t^2$	$y = mx + b$

Write on the axes what needs to be plotted to get a line. Use your circles to help match. If a quantity is squared, inverted, whatever, then its units must do the same.			
Identify what the slope of the line will represent physically (the coefficient on the linearized [I.V.])	slope = acceleration	$slope = \frac{1}{2}a$	
Identify what the y-intercept of the line will represent physically The constant term added to the [I.V.]	y-intercept = initial speed	$y - intercept = 0$	
	Graph the relationship between spring potential energy vs da stretch.	Graph the relationship between acceleration and mass for a constant force	Graph the relationship between F and r in the equation below.
Write an equation that is true in general (often from AP Physics 1 Equation sheet*)		$\vec{a} = \frac{\vec{F}_{net}}{m}$	$F = \frac{mv}{r^2}$
Plug specific values into the general equation	N/A	N/A	N/A
Identify which values are constant and which are variable.	Constant: Variable:	Constant: F_{net} Variable: a, m	

Sketch what a graph of the original data will look like. Write physical quantities and units.			
Line up your general equation with y=mx+b. Circle *x* and the independent variable together. Circle *y* and the dependent variable together.		$y = m\,x + b$ $a = F_{net} \cdot \frac{1}{m}$	
Write on the axes what needs to be plotted to get a line. Use your circles to help match.			
Identify what the slope of the line will represent physically (the coefficient on the linearized [I.V.])		$slope = F_{net}$	
Identify what the y-intercept of the line will represent physically The constant term added to the [I.V.]		$y - intercept = 0$	