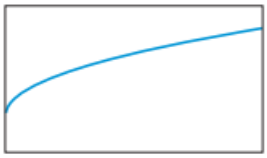
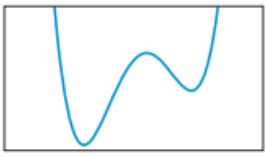
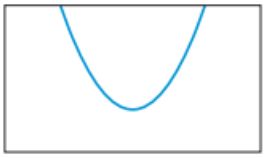
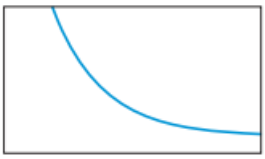
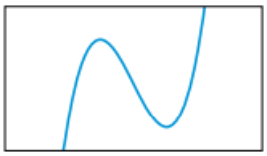
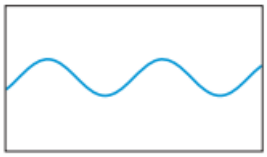
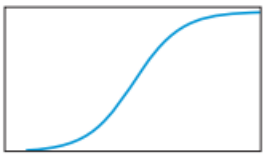
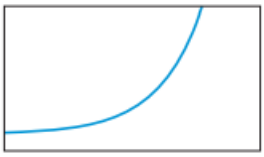
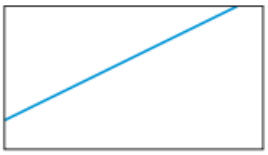
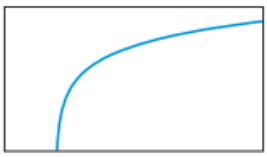
Regression Type	Equation	Graph	Applications
Natural Logarithmic	$y = a\sin(bx + c) + d$		Quartic growth, miscellaneous applications where quadratic and cubic regression do not give a good fit
Exponential Growth	$y = ax^2 + bx + c$ (requires at least 3 points)		Logistic growth: spread of a rumor, population models
Power	$y = ax^3 + bx^2 + cx + d$ (requires at least 4 points)		Volume as a function of linear dimension, cubic growth, miscellaneous applications where quadratic regression does not give a good fit
Sinusoidal	$y = ax^4 + bx^3 + cx^2 + dx + e$ (requires at least 5 points)		Position during free fall, projectile motion, parabolic reflectors, area as a function of linear dimension, quadratic growth, etc
Quartic	$y = a + b\ln x$ (requires $x > 0$)		Inverse-square laws, Kepler's third law
Logistic	$y = a \cdot b^x$ $(b > 1)$		Exponential growth, compound interest, population models
Linear	$y = a \cdot b^x$ $(0 < b < 1)$		Exponential decay, depreciation, temperature loss of a cooling body, etc.
Exponential Decay	$y = a \cdot x^b$ (requires $x, y > 0$)		Fixed cost plus variable cost, linear growth, free-fall velocity, simple interest, linear depreciation, many others
Cubic	$y = \frac{c}{1 + a \cdot e^{-bx}}$		Logarithmic growth, decibels logarithmic ln(sound), Richter scale (earthquakes), inverse exponential models
Quadratic	$y = ax + b$		Periodic behavior: harmonic motion, waves, circular motion, etc.