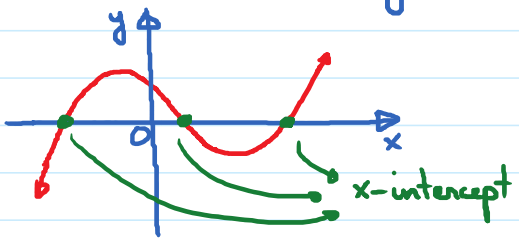
Graphs of Equations.

Wednesday, January 23, 2019 1:43 PM

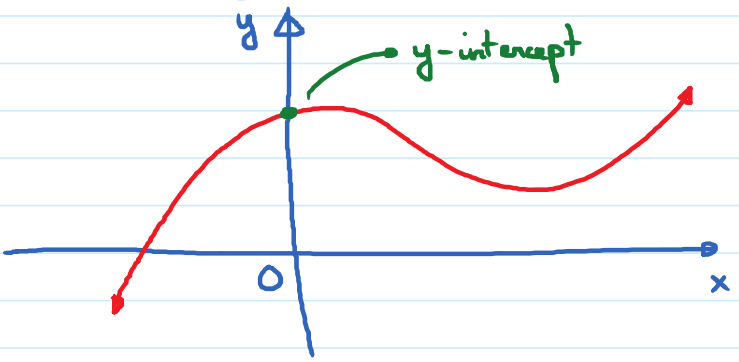
* The graph of an equation is the picture that represents all the solutions; i.e., all the ordered pairs for the equation.

* **Intercepts:**

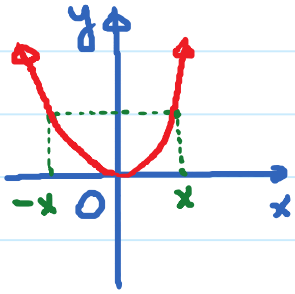
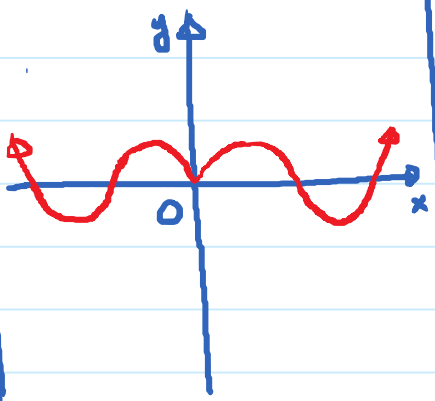
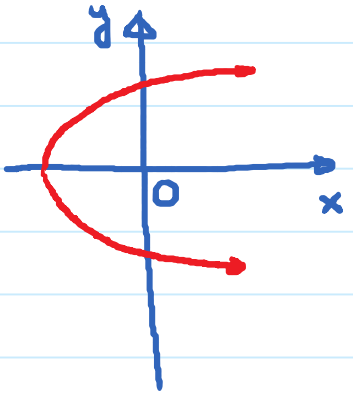
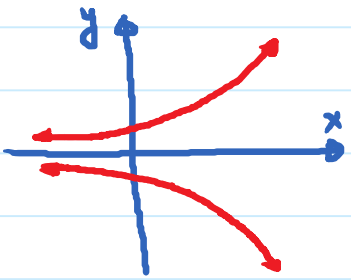
x-intercepts are where the graph of the equation crosses the x-axis; i.e., $y = 0$.



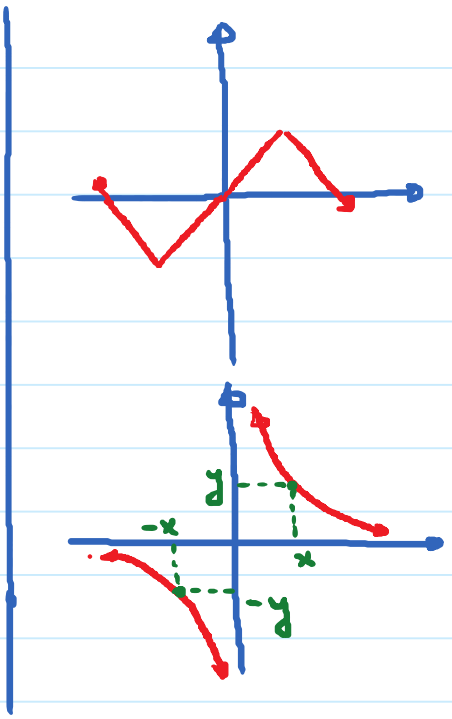
y-intercept is where the graph of the equation crosses the y-axis, i.e., $x = 0$



Symmetry:

Type	Graph	Algebraic Determination.
Symmetry with respect to y-axis	 	Substitute $-x$ for x and simplify. If we end up with the same equation, then the graph is symmetric w.r.t. the y-axis. E.g. $y = x^4 + x^2 - 7$ $y = (-x)^4 + (-x)^2 - 7$ $y = x^4 + x^2 - 7$ Same as original equation
Symmetry with respect to x-axis	 	Substitute $-y$ for y in the original equation and simplify → end up with original equation: $x - y^2 + 5y^4 + x^2 = 0$ → $x - (-y)^2 + 5(-y)^4 + x^2 = 0$ → $x - y^2 + 5y^4 + x^2 = 0$

Symmetry w.r.t. the origin



Substitute $-x$ for x and $-y$ for y and simplify

→ end up with original equation:

E.g. $x^3 + 3y = 0$

→ $(-x)^3 + 3(-y) = 0$

→ $-x^3 - 3y = 0$

→ $x^3 + 3y = 0$