Parent Functions Matching Cards Activity

Directions:

- Each student is given one of the following cards, a function or a graph of a function.

- The student who has the function must find the student who has the graph of the function. When the students are matched up, each pair is given an envelope/bag of the additional properties for parent functions. They must determine which cards apply to their particular parent function.
    - Name of Function
    - Domain
    - Range
    - Continuity
    - Increasing/Decreasing Behavior
    - Symmetry
    - Boundedness
    - Local Extrema (max/min)
    - Horizontal/Vertical Asymptotes
    - End Behavior

- Once completed the students put their items back in the envelope/bag, trade with another pair of students, and repeat with their new parent function.

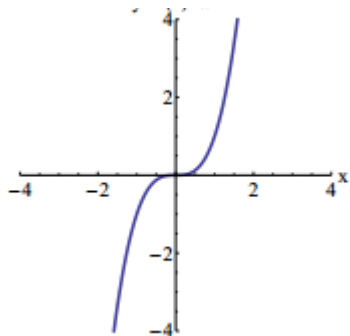|	
$y = x^2$	$y = x$
$y = x^3$	$y = \sqrt{x}$
$y = \dfrac{1}{x}$	$y = \dfrac{1}{1 + e^{-x}}$
$y = \sin x$	$y = \cos x$
$y = |x|$	$y = [\![x]\!]$

$y = \ln x$	$y = e^x$
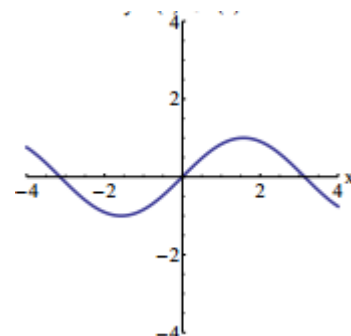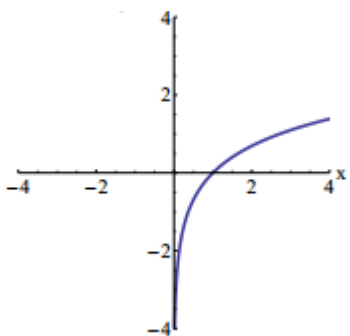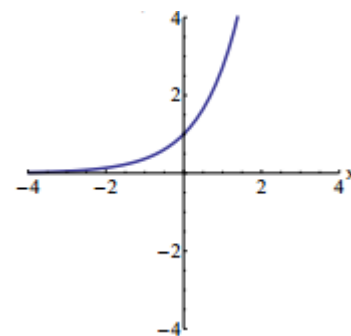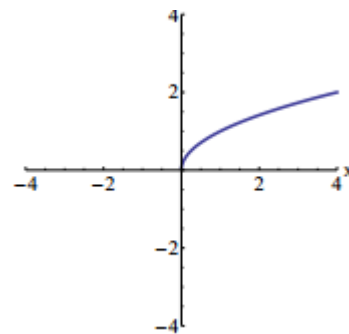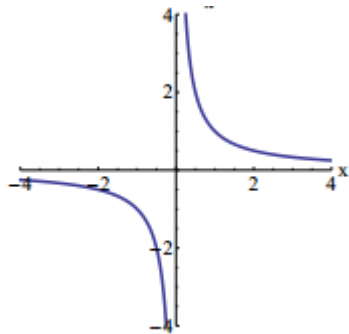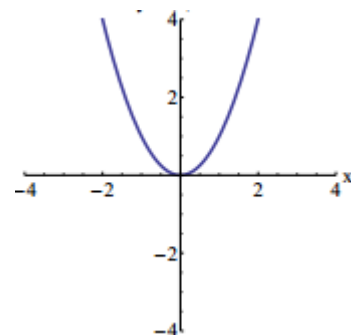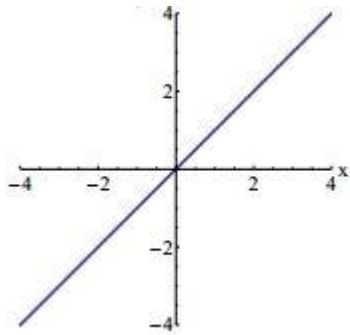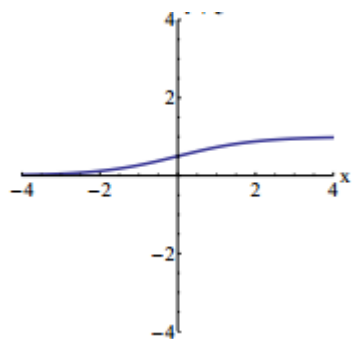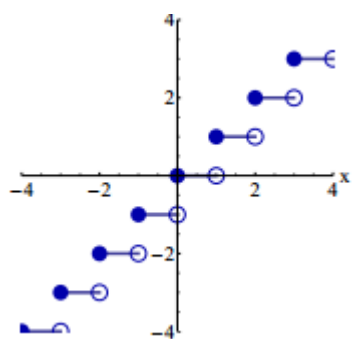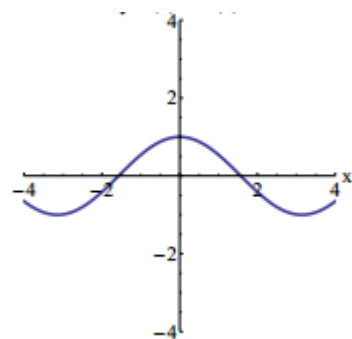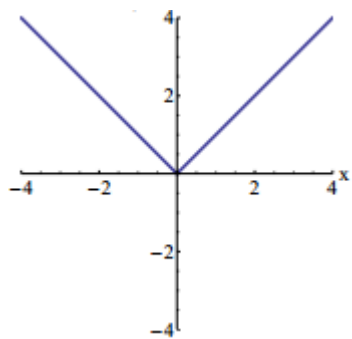
Identity Function

Squaring Function

Cubing Function

Absolute Value Function

Logistic Function

Logarithmic Function

Greatest Integer Function	Reciprocal Function
Natural Logarithmic Function	Exponential Function
Sine Function	Cosine Function
Domain: $(-\infty, \infty)$	Domain: $(0, \infty)$
Domain: $[0, \infty)$	Domain: $(-\infty, 0) \cup (0, \infty)$

Range: $(-\infty, \infty)$	Range: $(0, \infty)$
Range: $(-\infty, 0) \cup (0, \infty)$	Range: $[0, \infty)$
Range: $[-1, 1]$	Range: all integers
Range: $(0, 1)$	Continuous: Yes
Continuous: No	Decreasing: $(0, \infty)$

Decreasing: $(-\infty, 0)$	Decreasing: $(-\infty, 0) \cup (0, \infty)$
Never Increasing	Never Decreasing
Increasing: $(-\infty, \infty)$	Increasing: $(0, \infty)$
Increasing and decreasing alternately	Symmetry: Odd (w/respect to origin)
Symmetry: Even (w/respect to y-axis)	Symmetry: Neither even nor odd

Bounded Above	Bounded Below
Not Bounded	Bounded Above and Below
Local Minimum at (0,0)	No local minimum
No local maximum	Local minimum value –1
Local maximum value 1	Vertical Asymptote at $x = 0$

Horizontal Asymptote at $y = 0$	Horizontal Asymptote at $y = 1$
No Vertical Asymptotes	No Horizontal Asymptotes
End Behavior: $\lim_{x \to -\infty} f(x) = -\infty$ $\lim_{x \to \infty} f(x) = \infty$	End Behavior: $\lim_{x \to -\infty} f(x) = \infty$ $\lim_{x \to \infty} f(x) = \infty$
End Behavior: $\lim_{x \to -\infty} f(x) = 0$ $\lim_{x \to \infty} f(x) = 0$	End Behavior: $\lim_{x \to -\infty} f(x) = n/a$ $\lim_{x \to \infty} f(x) = \infty$
End Behavior: $\lim_{x \to -\infty} f(x) = 0$ $\lim_{x \to \infty} f(x) = \infty$	End Behavior: $\lim_{x \to -\infty} f(x) = 0$ $\lim_{x \to \infty} f(x) = 1$

End Behavior: $\lim_{x \to -\infty} f(x) = n/a$ $\lim_{x \to \infty} f(x) = n/a$	