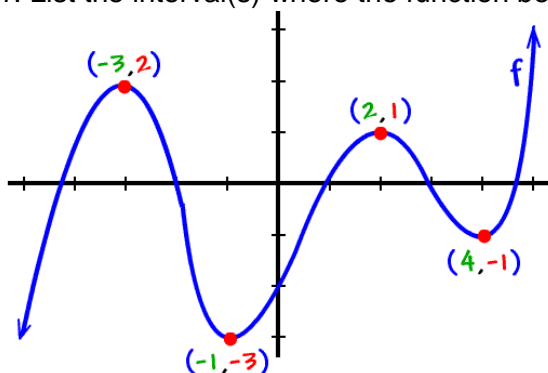


Pre-Calculus

CBA #2 (Rational & Polynomial Functions) Review

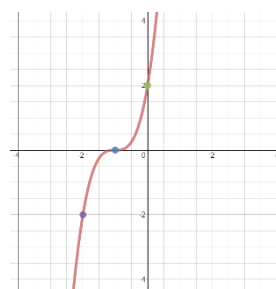
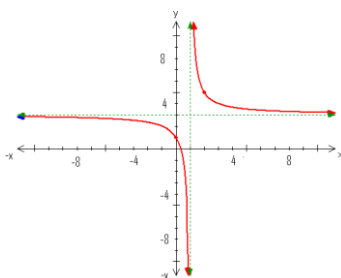
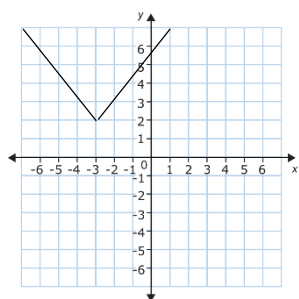
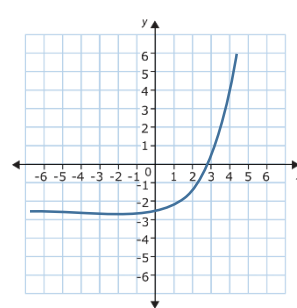
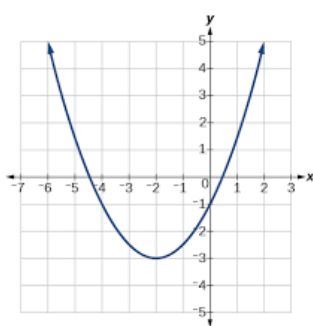
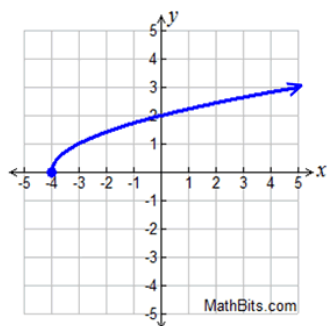
You will be allowed a calculator for the entire CBA (12 questions).

1. List the interval(s) where the function below is decreasing.



2. Find all solutions to the following equation. $x^3 - 15x^2 + 56x = 0$

3. What is the parent function of each graph?



4. List the transformations of the function $-0.3 f(x + 4) - 5$, when $f(x) = x^7$

Vertical shift:

Horizontal shift:

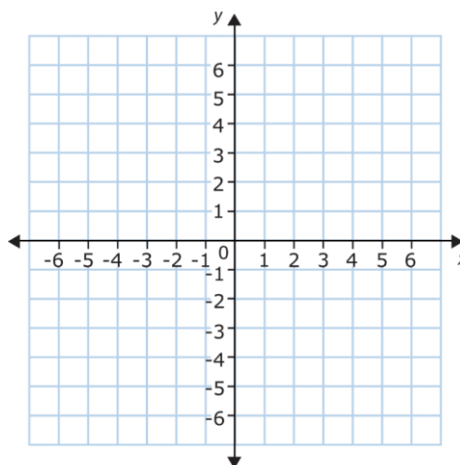
Vertical Compression/Stretch:

Horizontal Compression/Stretch:

Pre-Calculus

CBA #2 (Rational & Polynomial Functions) Review

5. Graph $g(x) = f(x - 2) + 4$ when $f(x) = x^3$



6. Graph $f(x) = 3x^{0.5}$ and answer the questions

a) What is the domain of $f(x)$?

b) Does this function have a zero?

c) Is the function increasing or decreasing?

d) Does $f(x)$ have any relative minima or maxima?

7. Ayma is investigating digestive patterns in arachnids. She has discovered that the resting metabolic rate of an arachnid can be represented as a power function in terms of the mass of the arachnid given by:

$$R(m) = 5m^{\frac{2}{5}}$$

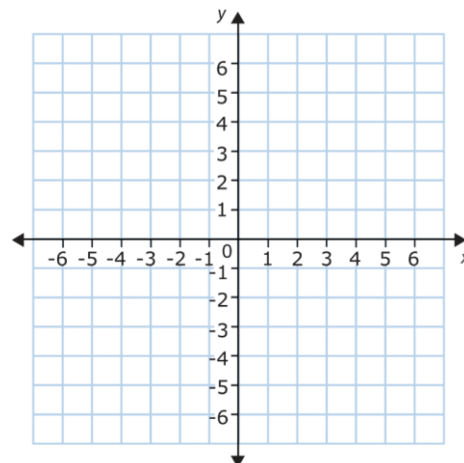
$R(m)$ represents the resting metabolic rate, RMR, and m represents the mass of the arachnid in grams. For approximately what body masses of arachnids will the RMR be less than or equal to 7? Round to the nearest thousandth of a gram. Think critically whether the body mass of a spider can equal to the end points of your solution.

8. Given the function, $f(x) = x^4 - x^3 - 6x^2$, on what intervals is $f(x) > 0$?

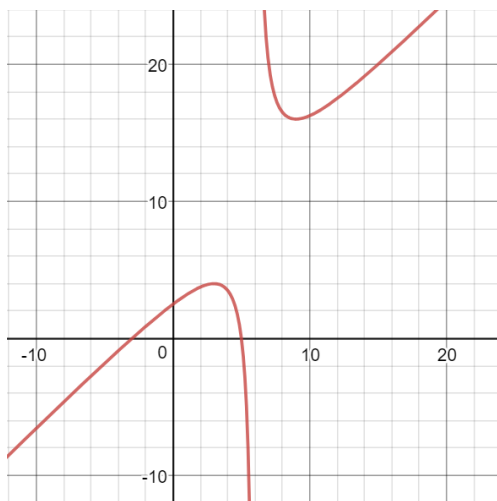
Pre-Calculus

CBA #2 (Rational & Polynomial Functions) Review

9. Graph the function: $f(x) = \frac{3x-6}{x^2-4}$. Label any asymptotes or removable discontinuities.



10. The graph of rational function $f(x) = \frac{x^2-2x-15}{(x-6)}$ is shown below.



What is the behavior of the function?

$$\text{as } x \rightarrow +\infty, f(x) \rightarrow$$

$$\text{as } x \rightarrow -\infty, f(x) \rightarrow$$

$$\text{as } x \rightarrow 6^+, f(x) \rightarrow$$

$$\text{as } x \rightarrow 6^-, f(x) \rightarrow$$

11. The equation for a rational function is given. $y = \frac{4x-8}{x^2-4}$. List where the function is discontinuous and state the type(s) of discontinuity.

12. The percentage of concentration of a certain drug in the bloodstream x hours after the drug is administered is given by $f(x) = \frac{5x}{x^2+9}$. What is the maximum percentage of a drug that is possible in this situation?