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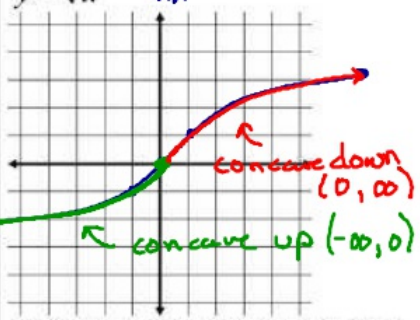
Sketch a graph of the following functions

$y = \sqrt[3]{x}$ $= 1x^{1/3}$



undefined for x<0 (no left side of graph)

1) Determine the domain and range

D: $(-\infty, \infty)$

R: $(-\infty, \infty)$

2) Is the function even, odd or undefined for x < 0

odd

3) Intervals of Increase or Decrease

inc $(-\infty, \infty)$

4) Find any extrema.

none

5) Determine the end behavior (y-values)

$\lim_{x \to \infty} f(x) = \infty$

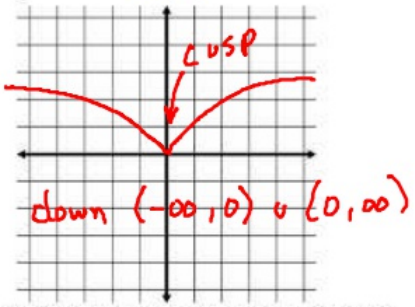
$\lim_{x \to -\infty} f(x) = -\infty$

6) Find any asymptotes

None

7) Intervals of Concavity

$y = x^{2/3} = \sqrt[3]{x^2}$



1) Determine the domain and range

2) Is the function even, odd or undefined for x < 0

3) Intervals of Increase or Decrease

4) Find any extrema.

5) Determine the end behavior

6) Find any asymptotes

7) Intervals of Concavity

Extrema: List all local and absolute minima and maxima

Local Extrema: List just the maxima and minima on the interior of the graph

End Behavior:

Right $\lim_{x \to \infty} f(x) =$

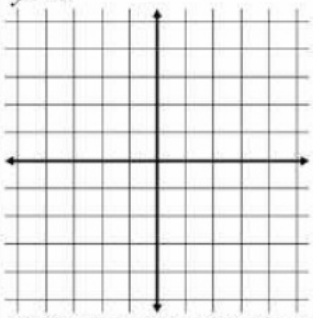
Left $\lim_{x \to -\infty} f(x) =$

end behavior

left $\lim_{x \to 0} f(x) = 0$

Sketch a graph of the following functions

$y = x^4$



1) Determine the domain and range

2) Is the function even, odd or undefined for $x < 0$

3) Intervals of Increase or Decrease

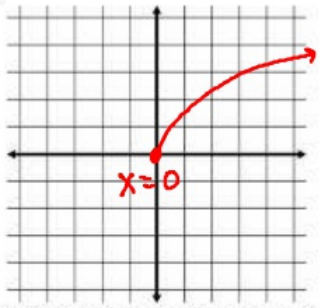
4) Find any extrema.

5) Determine the end behavior

6) Find any asymptotes

7) Intervals of Concavity

$y = \sqrt[4]{x}$



1) Determine the domain and range

2) Is the function even, odd or undefined for $x < 0$

3) Intervals of Increase or Decrease

4) Find any extrema.

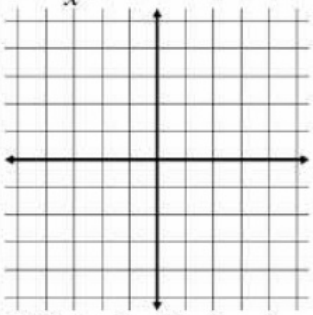
5) Determine the end behavior

6) Find any asymptotes

7) Intervals of Concavity

Sketch a graph of the following functions

$y = \frac{1}{x^2}$



1) Determine the domain and range

2) Is the function even, odd or undefined for $x < 0$

3) Intervals of Increase or Decrease

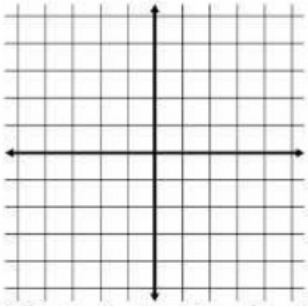
4) Find any extrema.

5) Determine the end behavior

6) Find any asymptotes

7) Intervals of Concavity

$y = x^{-3}$



1) Determine the domain and range

2) Is the function even, odd or undefined for $x < 0$

3) Intervals of Increase or Decrease

4) Find any extrema.

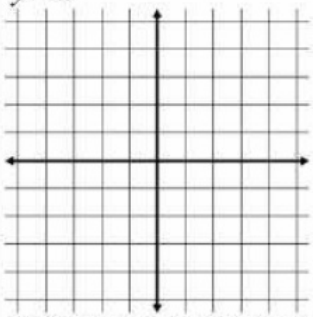
5) Determine the end behavior

6) Find any asymptotes

7) Intervals of Concavity

Sketch a graph of the following functions

$y = x^{3/2}$



1) Determine the domain and range

2) Is the function even, odd or undefined for $x < 0$

3) Intervals of Increase or Decrease

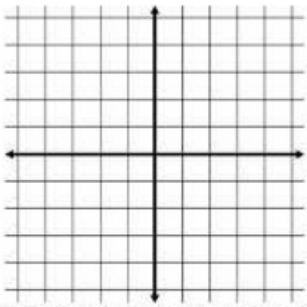
4) Find any extrema.

5) Determine the end behavior

6) Find any asymptotes

7) Intervals of Concavity

$y = x^{-3/2}$



1) Determine the domain and range

2) Is the function even, odd or undefined for $x < 0$

3) Intervals of Increase or Decrease

4) Find any extrema.

5) Determine the end behavior

6) Find any asymptotes

7) Intervals of Concavity

What you'll Learn About

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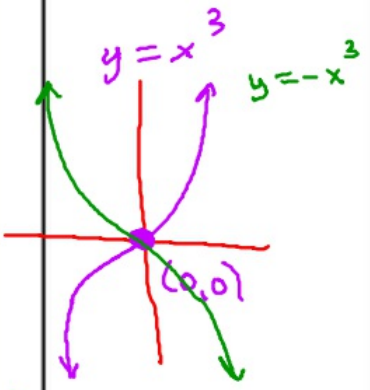
Describe how to transform the graph of an appropriate function $f(x) = x^n$. Then find the y-intercept of the function.

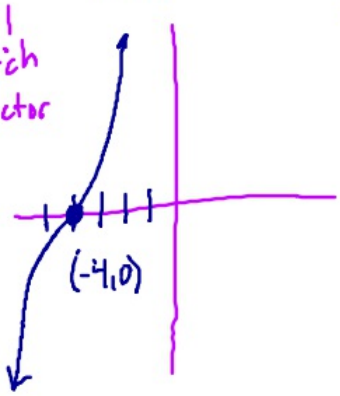


Point of Inflection
- where the concavity changes

a) $f(x) = 5(x+4)^3$

Left 4

vertical stretch by a factor of 5



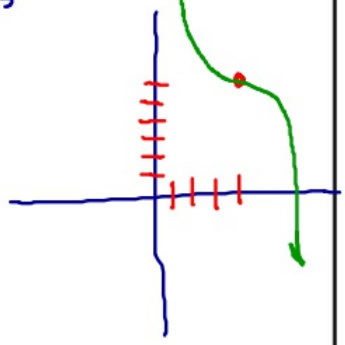
b) $f(x) = -\frac{1}{3}(x-4)^3 + 6$

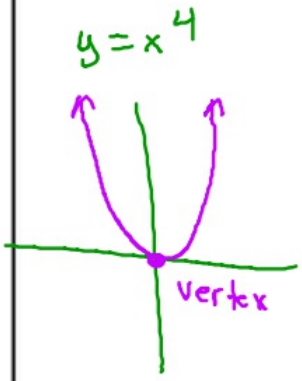
vertical compression

reflect over x-axis

right

up 6





c) $f(x) = -3(x-5)^4 - 2$

reflect over x-axis

vertical stretch by a factor of 3

right 5

down 2