Section 2.6

Find all asymptotes, intercepts, and removable discontinuities of the function and graph:

$$f(x)=\frac{2x^2+x-10}{x^2-4}$$

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Find all asymptotes, intercepts, and removable discontinuities of the function and graph:

$$f(x)=\frac{2x^2+x-10}{x^2-4} = \frac{(2x+5)\cancel{(x-2)}}{(x+2)\cancel{(x-2)}} = \frac{2x+5}{x+2}$$

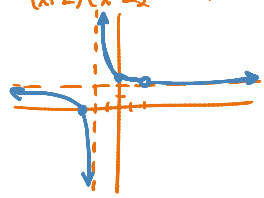
V.A. $x=-2$

R.D. $(2, \frac{9}{4})$

H.A. $y=2$

x-int $(-\frac{5}{2}, 0)$

y-int $(0, \frac{5}{2})$



Section 2.6

Graph the function and give the asymptotes, intercepts, and limits:

$$f(x)=\frac{2x^2+7x-4}{x-4}$$

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Graph the function and give the asymptotes, intercepts, and limits:

$$f(x)=\frac{2x^2+7x-4}{x-4} = \frac{(2x-1)(x+4)}{x-4}$$

V.A. $x=4$

H.A. none

Slant:

$$\begin{array}{r|rrr} 4 & 2 & 7 & -4 \\ + & & 8 & 60 \\ \hline & 2 & 15 & 56 \end{array}$$

$\boxed{y=2x+15}$

x-int $(\frac{1}{2}, 0)(-4, 0)$

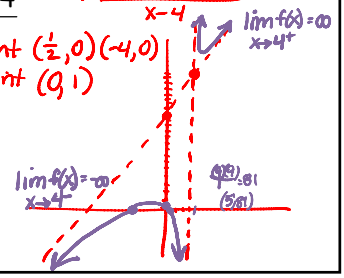
y-int $(0, 1)$

$\lim_{x\to 4^+} f(x)=\infty$

$\lim_{x\to 4^-} f(x)=-\infty$

$f(3)=81$

$(5, 81)$



Section 2.6

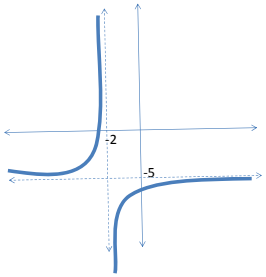
Find the limits

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

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

$\lim_{x\to-2^-} f(x) =$

$\lim_{x\to-2^+} f(x) =$



Section 2.6

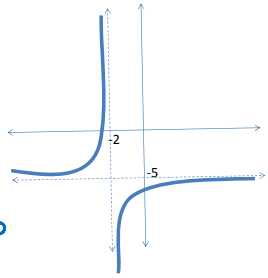
Find the limits

$\lim_{x\to\infty} f(x) = -5$

$\lim_{x\to-\infty} f(x) = -5$

$\lim_{x\to-2^-} f(x) = \infty$

$\lim_{x\to-2^+} f(x) = -\infty$



Section 2.7

Solve for x: $\frac{2x}{x-1}+\frac{1}{x-3}=\frac{2}{x^2-4x+3}$

Section 2.7

Solve for x: $\frac{2x}{x-1}+\frac{1}{x-3}=\frac{2}{x^2-4x+3}$ LCD: $(x-1)(x-3)$

$\left[\frac{2x}{x-1}+\frac{1}{x-3}=\frac{2}{(x-1)(x-3)}\right]$ $x\neq 1,3$

$2x(x-3)+1(x-1)=2$

$2x^2-6x+x-1=2$

$2x^2-5x-3=0$

$(2x+1)(x-3)=0$

$\boxed{x=\frac{-1}{2}}$, $\cancel{3}$

Section 2.8

Solve the inequality: $\frac{x+2}{x^2-9}<0$

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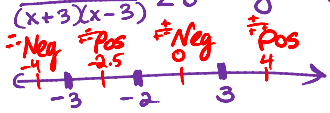
Solve the inequality: $\frac{x+2}{x^2-9}<0$

$\frac{x+2}{(x+3)(x-3)}<0$ Neg only

zero $x=-2$
und $x=-3,3$



$\boxed{(-\infty,-3)\cup(-2,3)}$

Section 2.8

Solve the inequality: $(3x-4)\sqrt{2x+1}\geq 0$

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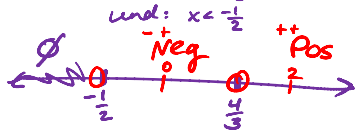
Solve the inequality: $(3x-4)\sqrt{2x+1}\geq 0$

zeros: $x=\frac{4}{3},\frac{-1}{2}$

und: $x<\frac{-1}{2}$

Pos and zeros



$\boxed{\left[\frac{-1}{2}\right]\cup\left[\frac{4}{3},\infty\right)}$

Section 2.8

Volume of a box

- Find the maximum volume of a box that can be created by a cardboard rectangle that measures 8 in by 10 in.

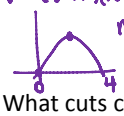
- What cuts can be made so the volume is at least 40 cubic inches? (answer in interval notation.

Section 2.8

Volume of a box

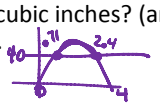
- Find the maximum volume of a box that can be created by a cardboard rectangle that measures 8 in by 10 in.

$V = (8-2x)(10-2x)x$



max = 52.5 in³
cut = 1.5 in

- What cuts can be made so the volume is at least 40 cubic inches? (answer in interval notation.



[.71, 2.4]