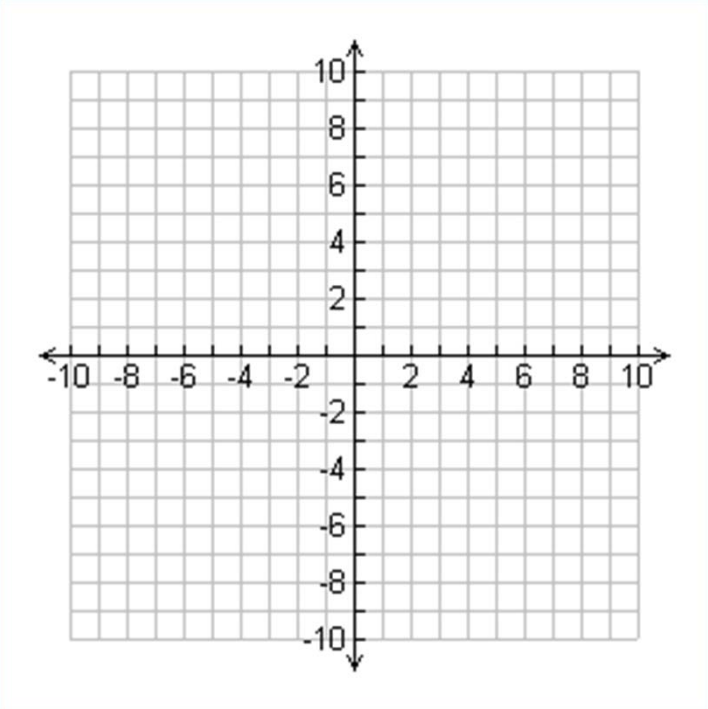
2.6-2.8 REVIEW

Extra Practice

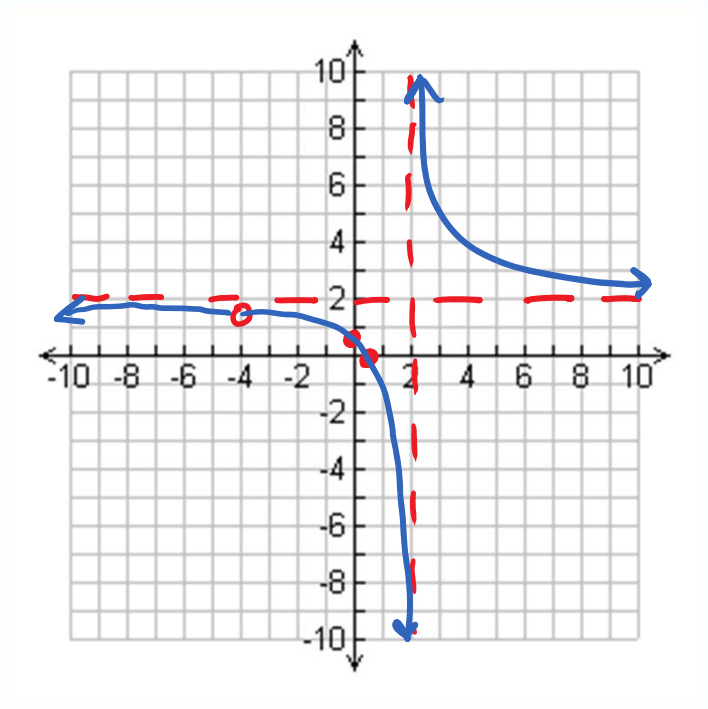
#1. Identify all discontinuities, intercepts and graph the function.



$$k(x) = \frac{2x^2 + 7x - 4}{x^2 + 2x - 8}$$

Can you also identify the behavior around the vertical asymptote(s) and end behavior?

#1. Identify all discontinuities, intercepts and graph the function.



$$k(x) = \frac{2x^2 + 7x - 4}{x^2 + 2x - 8}$$

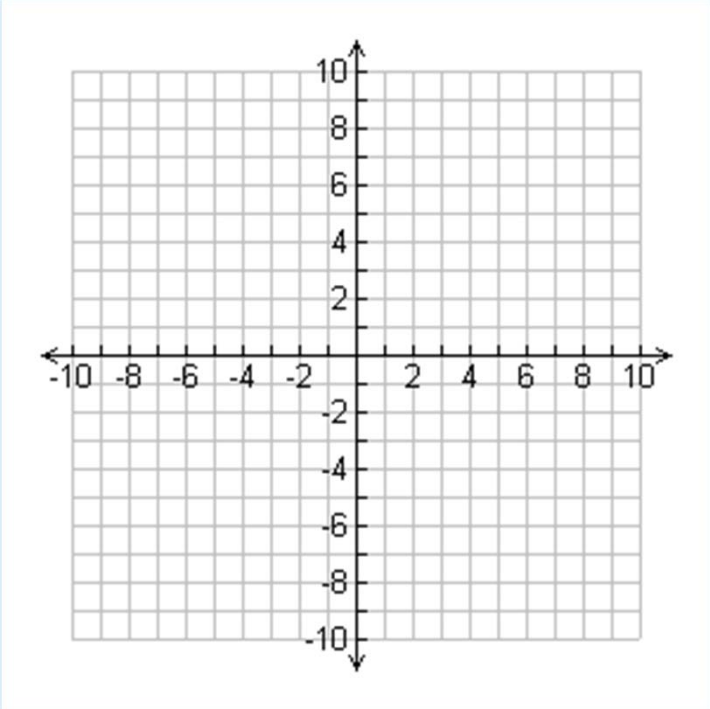
$k(x) = \dfrac{(2x-1)(x+4)}{(x+4)(x-2)}$ x-int: $\frac{1}{2}$ y-int: $\frac{1}{2}$

R.D. @ $(-4, 3/2)$ V.A.: $x = 2$ H.A.: $y = 2$

Can you also identify the behavior around the vertical asymptote(s) and end behavior?

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

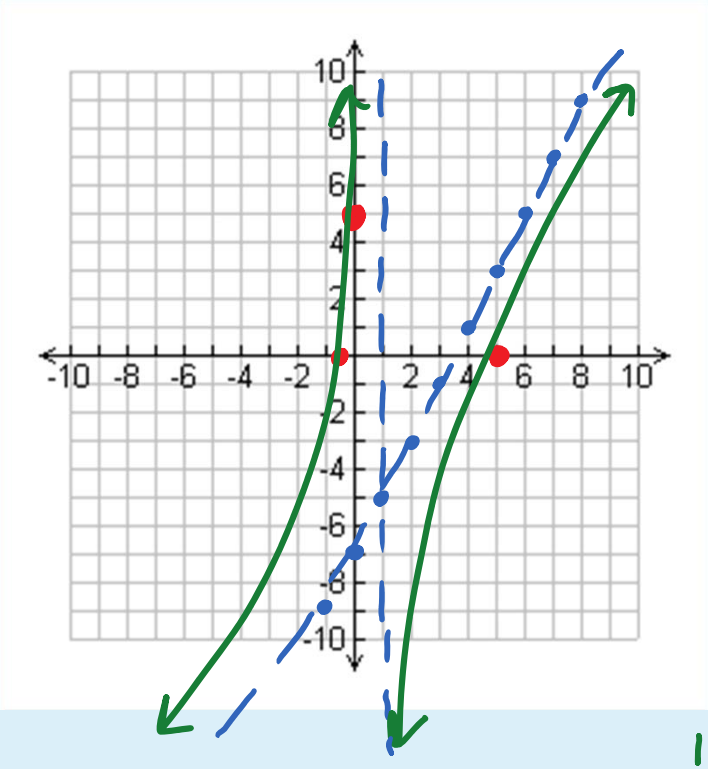
#2. Identify all discontinuities, intercepts and graph the function.



$$w(x) = \frac{2x^2 - 9x - 5}{x - 1}$$

Can you also identify the behavior around the vertical asymptote(s) and end behavior?

#2. Identify all discontinuities, intercepts and graph the function.



$$w(x) = \frac{2x^2 - 9x - 5}{x - 1}$$

$w(x) = \frac{(2x+1)(x-5)}{(x-1)}$

y-int: $(0, 5)$

x-int: $-1/2$ & 5

no R.D. or H.A.

V.A: $x = 1$

S.A.: $y = 2x - 7$

$$1 \mid 2 \quad -9 \quad -5$$
$$\downarrow \quad 2$$
$$2 \quad -7$$

Can you also identify the behavior around the vertical asymptote(s) and end behavior?

$\lim_{x \to 1^-} w(x) = \infty$ $\lim_{x \to 1^+} w(x) = -\infty$ $\lim_{x \to \infty} w(x) = \infty$ $\lim_{x \to -\infty} w(x) = -\infty$

#3. Solve for x. Check for extraneous solutions.

$$2x + \frac{12}{x} = 11$$

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$$x\left(2x+\frac{12}{x}\right)=(11)x$$

$$2x^2+12=11x$$

$$2x^2-11x+12=0$$

$$(2x-3)(x-4)=0$$

$x=3/2$ $\quad$ $x=4$

#4. Solve for x. Check for extraneous solutions.

$$\frac{x}{x+2}+\frac{5}{x-3}=\frac{25}{x^2-x-6}$$

#4. Solve for x. Check for extraneous solutions.

$$(x-3)(x+2)\left(\frac{x}{x+2}+\frac{5}{x-3}\right)=\left(\frac{25}{x^2-x-6}\right)(x-3)(x+2)$$

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

$$x(x-3)+5(x+2)=25$$

$$x^2-3x+5x+10-25=0$$

$$x^2+2x-15=0$$

$$(x+5)(x-3)=0$$

$x=-5$ $\quad$ ~~$x=3$~~

#5. Solve for x. Check for extraneous solutions.

$$\frac{3}{x+1}+\frac{6}{x^2+x}=\frac{3-x}{x}$$

#5. Solve for x. Check for extraneous solutions.

L.C.D.: $x(x+1)$

$$x(x+1)\left(\frac{3}{x+1}+\frac{6}{x^2+x}\right)=\left(\frac{3-x}{x}\right)x(x+1)$$

$x(x+1)$

$3x + 6 = (3-x)(x+1)$

$3x + 6 = 3x + 3 - x^2 - x$

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

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

$x = \frac{-1 \pm \sqrt{1-4(1)(3)}}{2(1)}$

$x = \frac{-1 \pm \sqrt{-11}}{2}$

NO REAL SOLUTION

#6. identify the value(s) and/or interval(s) of the graph that are a. positive, b. negative, c. zero or d. undefined.

$$f(x) = (x+2)^3(4x^2+1)(x-9)^4$$

#6. identify the value(s) and/or interval(s) of the graph that are a. positive, b. negative, c. zero or d. undefined.

$$f(x) = (x+2)^3(4x^2+1)(x-9)^4$$

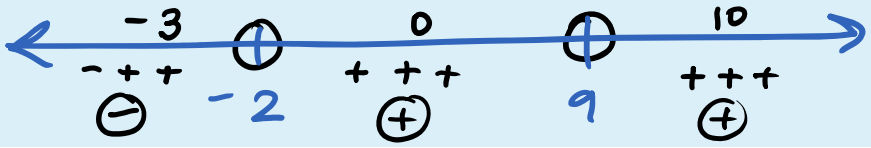
$x+2=0 \rightarrow -2$

$4x^2+1=0$

$\sqrt{x^2} = \sqrt{-1/4}$

$\emptyset$

$x-9=0 \rightarrow 9$



a) $(-2, 9) \cup (9, \infty)$

b) $(-\infty, -2)$

c) $x = -2, 9$

d) n/a

#7. Solve the inequality.

$$\frac{x^2 - 9}{x^2 - 4x - 5} \leq 0$$

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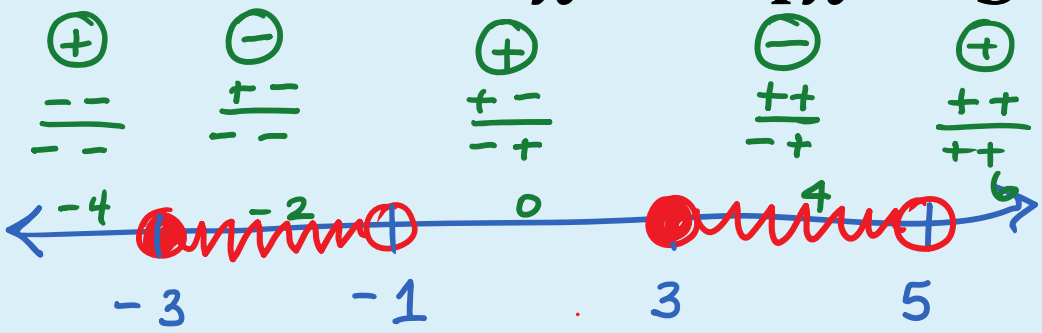
$$\frac{x^2-9}{x^2-4x-5} \leq 0$$

negatives & zeros!

$$\frac{(x+3)(x-3)}{(x-5)(x+1)}$$

x-int's: ± 3

und: $5, -1$



$[-3,-1) \cup [3,5)$

#8. Solve the inequality.

$$\frac{(x-1)|x-4|}{\sqrt{x+3}} \geq 0$$

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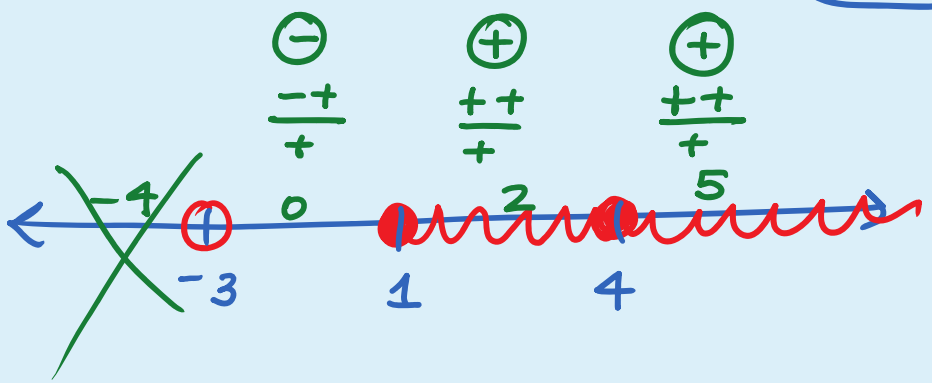
$$\frac{(x-1)|x-4|}{\sqrt{x+3}} \geq 0$$

positives & zeros!

x-int: 1, 4

$x+3>0$

$x>-3$



$[1, \infty)$

Don’t forget box problems!