Homework Questions

2.7 Solve Rational Expressions

Oct 10-3:11 PM

Homework Questions

㉑ $\dfrac{2x+1}{x^2-x}$ → $x(x-1)$

VA: 0, 1

$X = 0$

$X - 1 = 0$
$+1 \quad +1$

$X = 1$

HA: $\dfrac{2x}{x^2} = 0$:)

$\lim\limits_{x \to 0^-} f(x) = \infty$

$\lim\limits_{x \to 0^+} f(x) = -\infty$

$\lim\limits_{x \to \infty} f(x) = 0$

$\lim\limits_{x \to 1^-} f(x) = -\infty$

$\lim\limits_{x \to 1^+} f(x) = \infty$

$\lim\limits_{x \to -\infty} f(x) = 0$

Oct 10-3:11 PM

㉔ $\dfrac{x+2}{x^2+2x-3}$ $3 \diagup^{-3}_2 {-1}$ $(x+3)(x-1)$ $x = -3, 1$

VA: -3, 1   X: $(-2, 0)$

HA: $\dfrac{x}{x^2} = 0$ $x+2 = 0$
$\qquad\qquad\qquad -2 \quad -2$
$\dfrac{0+2}{0^2+0-3} = -\dfrac{2}{3}$ y $\left(0, -\dfrac{2}{3}\right)$ $x = -2$

Nov 3-1:22 PM

2.7 Solving Rational Expressions

Steps:

1. Find the restrictions
2. Factor
3. Get a common denominator
4. Multiply by the common denominator
5. Cross multiply (across the equal sign)
6. Solve for x
7. Always check answer
   1. Check on calculator
   2. # then hit stor-> then put in x
   3. Then put the equation in calculator

Oct 10-3:15 PM

Examples

$\dfrac{x}{x} \cdot X + \dfrac{3}{x} = 4$

$\dfrac{x^2}{x} + \dfrac{3}{x} = 4$

$x \cdot \dfrac{x^2+3}{x} = 4 \cdot x$

$x^2 + 3 = 4x$ $x^2 - 4x + 3 = 0$
$\quad -4x \quad -4x$

$-1 \diagup^{3}_{-4} {-3}$ $(x-1)(x-3)$
$\qquad\qquad x - 1 = 0$ $X = 1$
$\qquad\qquad x - 3 = 0$ $X = 3$

Oct 10-3:16 PM

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ex 2

$\dfrac{1}{x} + \dfrac{1}{x-4} = 0$

$\dfrac{x-4}{x-4} \cdot x + \dfrac{1}{x-4} = 0$

$\dfrac{x(x-4)}{x-4} + \dfrac{1}{x-4} = 0$

$\dfrac{x(x-4)+1}{x-4} = 0 \quad x-4$

$x^2 - 4x + 1 = 0$
$\quad \text{a} \quad \text{b} \quad \text{c}$

$\dfrac{4 \pm \sqrt{(-4)^2 - 4(1)}}{2}$ $\dfrac{4 \pm \sqrt{12}}{2}$

$\dfrac{4 \pm \sqrt{16-4}}{2}$ $\dfrac{4 \pm 2\sqrt{3}}{2}$

$2 \pm \sqrt{3} \approx$ $\left(.268, 3.732\right)$

Nov 3-1:44 PM