

4.4 HW and 4.5 HW (7-12) & (21-26) checked off today

4.6 HW (finish pgs.30-31 and skip pgs.32-34) due today

4.7 HW due Wednesday (I will check it off and collect your blue sheet Friday).

**Get your Rational Functions Review out;
today's our day!!**

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21. $0 = \frac{(x-1)(x+2)}{x}$

22. $0 = \frac{x^3 + 2x^2 + x}{x+1}$
 $0 = \frac{x(x^2 + 2x + 1)}{(x+1)} = \frac{x(x+1)(x+1)}{(x+1)} = x(x+1)$

23. $\frac{(x-1)(x+2)}{2x} = 0$
Answer: $x=0, -1$

24. $0 = \frac{x^3 + 2x^2 + x}{x+2}$

25. $0 = \frac{.001(x^4 + 4x^2 + 4)}{x}$
 $0 = \frac{0.001(x^2+2)(x^2+2)}{x}$
 ~~$0 = 0.001(x^2+2)(x^2+2)$~~ *ignore*

26. $\frac{2x+1}{x^2} < 0$
*ex. v: $x = -1$
 hole @ $x = -1$*

$\frac{0}{\#} = 0$

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$0 = x^2 + 2$
 $\sqrt{-a} = \sqrt{x^a}$
 $\pm i\sqrt{2} = x$

8.50 x 11.00 in

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or each of the given functions determine the output or range value that is approached by the function as the x-value approaches $+\infty$ and also $-\infty$.

8. $\frac{d^3}{dx^3} g(x) = \frac{x^3 + 2x^2 + x}{x + 1}$

9. $h(x) = \frac{(x-1)(x+2)}{2x}$

10. $f(x) = \frac{(x-1)(x+2)}{x}$

11. $e.b \rightarrow \infty$
 $g(x) = \frac{x(x^2 + 2x + 1)}{(x+1)} = \frac{x(x+1)(x+1)}{(x+1)} = x(x+1)$

12. $g(x) = \frac{2x+1}{x^2}$

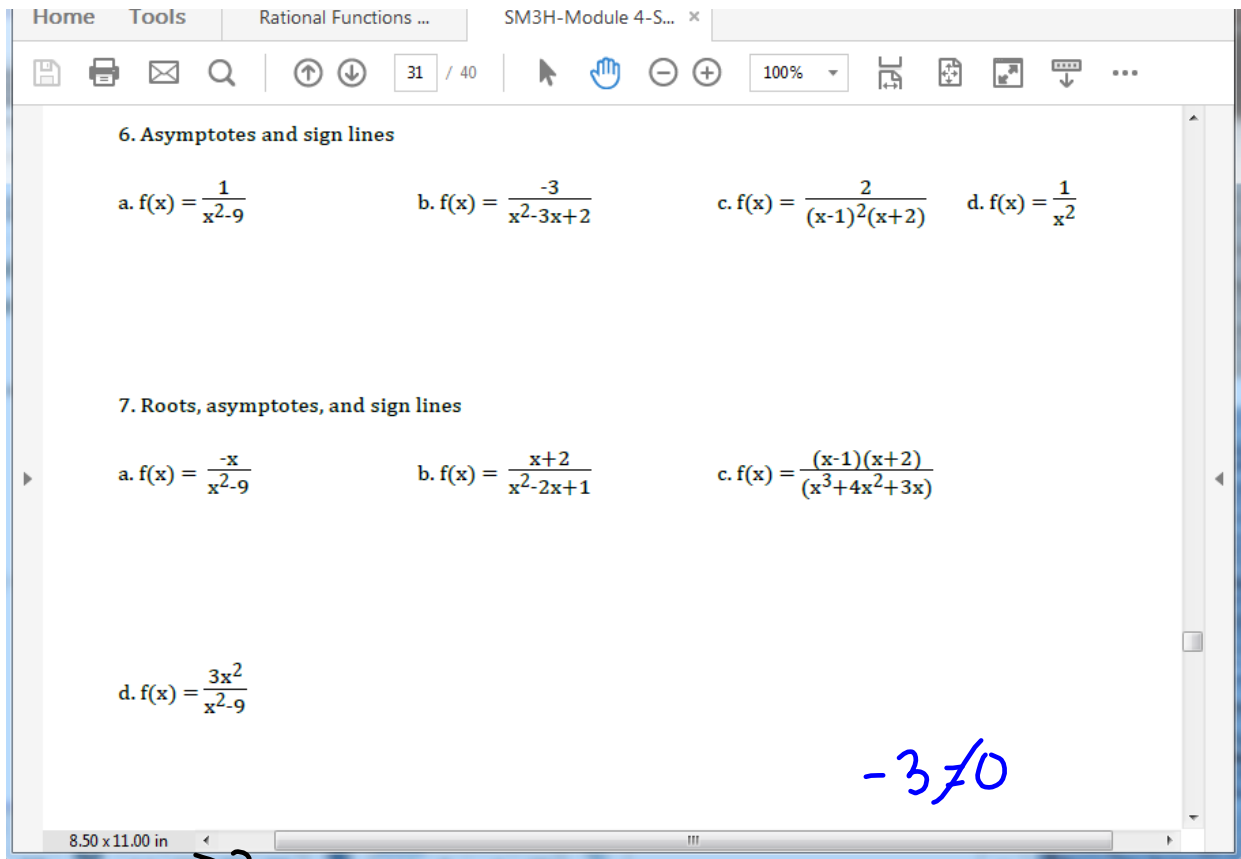
11. $p(x) = \frac{.001(x^4 + x^2 + 4)}{x}$

10. $t(x) = \frac{x^3 + 2x^2 + x}{x + 2}$

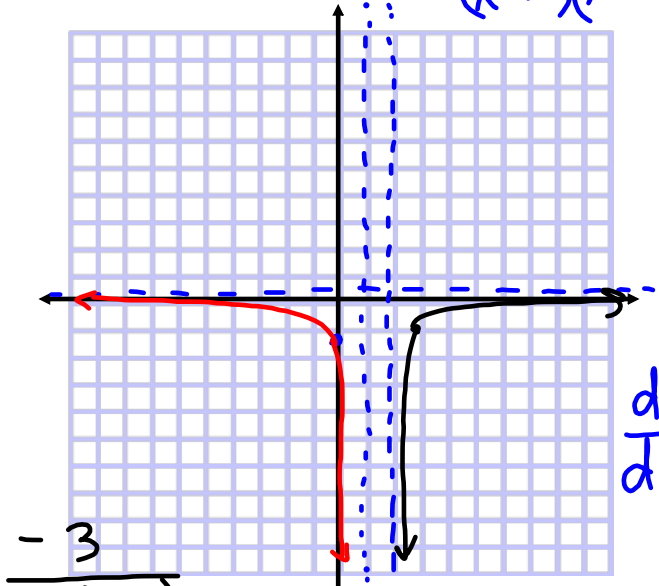
opic: Even and Odd functions

3. Determine which of the following functions are even, odd or neither. Label them accordingly.

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



no x-intercepts
 y-intercept:
 $\frac{-3}{-2 \cdot -1} = -\frac{3}{2}$
 $(0, -\frac{3}{2})$

vertical asy:
 $x=2, x=1$
 horizontal asy @
 $y=0$

$\frac{-3}{(x-2)(x-1)}$ U + U -

Number line for sign analysis:
 Points: $-1, 1, \frac{1}{2}, 2, 3$
 Intervals: $(-\infty, -1), (-1, 1), (1, \frac{1}{2}), (\frac{1}{2}, 2), (2, 3), (3, \infty)$
 Signs: $-, +, -, +, -, +$
 Calculations:
 $\frac{-3}{-3 \cdot -2} = -\frac{1}{2}$
 $\frac{-3}{(\frac{1}{2}) \cdot (\frac{1}{2})} = -3 \cdot -4 = 12$
 $\frac{-3}{1 \cdot 2} = -\frac{3}{2}$

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$f(x) = \frac{2}{x+3} - 2$

 (1) dilation

 $2(x+3) = 2(x+3) \cdot \frac{1}{x+3} - 2(x+3)$

 $2x+6 = 2 - 2x-6$

 $2x+2x = 2-6-6$

 $4x = -10$

 $x = -\frac{10}{4} = -\frac{5}{2}$

 $x = -2.5$

Horizontal Asymptote(s): $y = -2$

 Vertical Asymptote(s): $x = -3$

 Slant Asymptote(s): none

 x-intercept(s): $(-2, 0)$

 y-intercept(s): $(0, -\frac{1}{3})$

 Hole(s): none

y-int:

$$f(x) = \frac{2}{0+3} - 2$$



$$\frac{2}{-4+3} - 2$$

$$\frac{2}{-1} - 2$$

$$-2 - 2$$

$$-4$$

$$(-4, -4)$$

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Solve each equation. Remember to check for extraneous solutions.

7. $\frac{1}{3r} + \frac{r+3}{3r} = \frac{1}{r}$

8. $\frac{3}{k^2 - 5k} + \frac{6 \cdot \frac{(k-5)}{(k-5)} \cdot 1 \cdot \frac{k}{k}}{k \cdot (k-5) \cdot k}$ k ≠ 0, 5

k(k-5)

$$\frac{3}{k(k-5)} + \frac{6k-30}{k(k-5)} - \frac{k}{k(k-5)} = 0$$

$$\frac{3+6k-30-k}{k(k-5)} = 0$$

Graph each rational function below. Write out or label any vertical, horizontal, or slant asymptotes; any x- and y-intercepts; holes. If there aren't any of what's asked for above, write "none."

9. $f(x) = \frac{2}{x+3} - 2$

$$\frac{-27+5k}{k(k-5)} = 0$$

$$-27+5k = 0$$

↑ y

$$\frac{5k}{5} = \frac{27}{5}$$

$$k = \frac{27}{5}$$