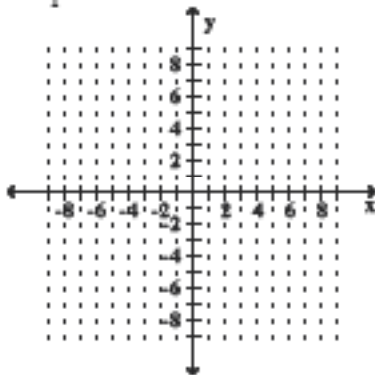


Given the following rational function find the following:

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

- a) domain:
- b) Vertical Asymptote(s)
- c) End Behavior Asymptote: (Horizontal/Oblique/Other)
- d) x- Intercept(s)
- e) y-Intercept:

Graph



Solve the polynomial inequality.

2) $3x^4 - 18x^2 < 0$

Solve the rational inequality.

3) $\frac{(x - 2)^2}{x^2 - 9} > 0$

List the potential rational zeros of the polynomial function. Do not find the zeros.

4) $f(x) = 6x^4 + 4x^3 - 2x^2 + 2$

Find all zeros of the function and write the polynomial as a product of linear factors.

5) $f(x) = 2x^4 + 3x^3 + 9x^2 + 12x + 4$

Information is given about a polynomial $f(x)$ whose coefficients are real numbers. Find the remaining zeros of f .

6) Degree 6; zeros: -2 , $2 + i$, $-3 - i$, 0

Form a polynomial whose zeros and degree are given.

7) Zeros: 3 , multiplicity 2; -3 , multiplicity 2; degree 4

For the given polynomial,

- list each real zero and its multiplicity.
- Determine whether the graph crosses or touches the x -axis at each x -intercept and the shape of the graph at that intercept.
- What is the power function and the end behavior of the function.

$$8) f(x) = \left(x + \frac{1}{5}\right)^2 (x + 9)^3$$

Solve.

- 9) The price of electric guitars has varied considerably in recent years. The data in the table relates the price P , in dollars, to time t , in years, where $t = 1$ corresponds to 1988. Fit a cubic function to the data and use it to predict the price of an electric guitar in 1997.

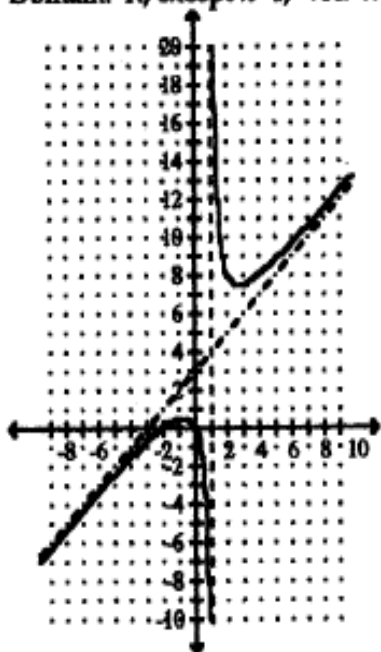
Year, t	Average price, p , of an electric guitar
1988 ($t = 1$)	\$618.20
1989 ($t = 2$)	783.20
1990 ($t = 3$)	674.30
1991 ($t = 4$)	721.60
1992 ($t = 5$)	825.00
1993 ($t = 6$)	891.00
1994 ($t = 7$)	852.50
1995 ($t = 8$)	819.50
1996 ($t = 9$)	783.20

b) find the average rate of change between 1992 and 1994.

Answer Key

Testname: 150_CH3_REV_Spring 2009

- 1) Domain: \mathbb{R} ; except $x=1$; VA: $x=1$; OA: $y=x+3$; x-intercepts: $(0,0), (-2,0)$; y-intercept: $(0,0)$



2) $x < -\sqrt{6}$ or $0 < x < \sqrt{6}$ $(-\sqrt{6}, 0) \cup (0, \sqrt{6})$

3) $(-\infty, -3)$ or $(3, \infty)$

4) $\pm \frac{1}{6}, \pm \frac{1}{3}, \pm \frac{1}{2}, \pm \frac{2}{3}, \pm 1, \pm 2$

5) $f(x) = (2x+1)(x+1)(x+2i)(x-2i)$

6) $2-i, -3+i$

7) $f(x) = x^4 - 18x^2 + 81$

8) $-\frac{1}{5}$, Mult. 2, Touch, parabola

-9 , Mult 3, Cross, "S"

Power function: x^5

end behavior: Bottom/Top

9) \$672.76

Answers may vary based on rounding.
Should be in the \$670 range.

b) \$13.75 per year.