

2009, 22	\$7949
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Quartic: \_\_\_\_\_

b) Based on the  $R^2$  value, which function is the best fit? \_\_\_\_\_ (1 Pt)

c) Is this function appropriate for future predictions? Why or why not? (2 Pts)

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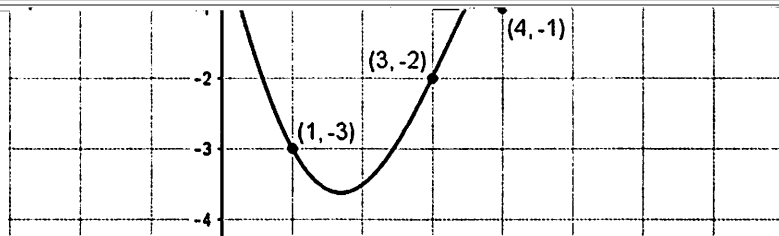
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\_\_\_\_\_ (3 Pts)

11. Solve the following inequality, graph its solution on a number line, and write the answer in interval notation.

$$|x - 2| > 4$$

\_\_\_\_\_ (4 Pts)



a) What is the domain of  $(f + g)(x)$ ? (2 Pts)

b) What is the domain of  $\left(\frac{f}{g}\right)(x)$ ? (3 Pts)

\_\_\_\_\_ (4 Pts)

15. Let  $f(x) = x^3 - 5x^2 + 9x - 5,$

a) List all zeros of  $f(x)$  both real and complex.

\_\_\_\_\_ (6 Pts)

b) Factor  $f(x)$  completely. Write as a product of linear factors.

\_\_\_\_\_ (2 Pts)

16. Find the critical values and solve the inequality. Give the solution in interval notation.

$$\frac{2-x}{3x+4} \geq 0.$$

\_\_\_\_\_ (5 Pts)

the first year, depositing \$1000 in a retirement account bearing 6% compounded monthly over the next 37 years, how much more money to the nearest cent will he have as compared to Emily? Assume all variables are

( n )

\_\_\_\_\_ (4 Pts)

20. Solve algebraically for  $x$ , writing solution(s) in exact form.

b)  $\ln x - \ln(x-4) = \ln 3$

\_\_\_\_\_ (4 Pts)

a) the equation of the vertical asymptote.

\_\_\_\_\_ (1 Pt)

b) the equation of the horizontal asymptote.

\_\_\_\_\_ (1 Pt)

c) the equation of the oblique asymptote.

\_\_\_\_\_ (2 Pts)

d) the  $x$ -intercept(s). Write answer(s) as ordered pairs.

\_\_\_\_\_ (2 Pts)

e) the  $y$ -intercept. Write answer(s) as an ordered pair.

22. Solve the following nonlinear system, giving the solution(s) as ordered pair(s).

$$x^2 + 2y^2 = 9$$

$$x^2 - y^2 = 6$$

\_\_\_\_\_ (4 Pts)

23. Suppose the following matrix equation is true.

$$\begin{bmatrix} 3 & -1 \\ x & 4 \end{bmatrix} \begin{bmatrix} 2 \\ 1 \end{bmatrix} = \begin{bmatrix} 5 \\ 16 \end{bmatrix}$$

a) Set up an equation that can be used to find the value of x.

\_\_\_\_\_ (2 Pts)

b) Determine the value of x.

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