Midterm 2 Study Problems

Math_139/Burger

 No graphing calculators allowed says ‘you know who!’

(20pts)

1. Factor each of the following polynomials into linear terms with integer coefficients:

$$h(x) = x^4 - x^3 - 7x^2 + x + 6$$

$$g(x) = x^3 - 3x^2 + 4$$

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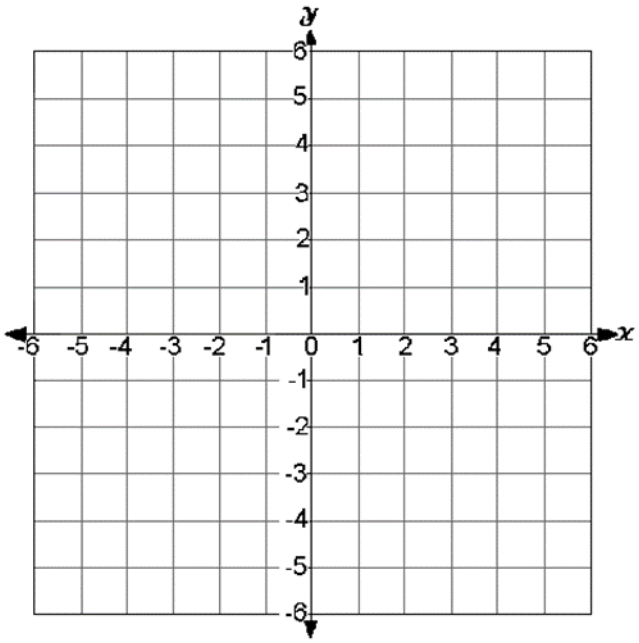
(25pts)

2. Graph this rational function using the functions in the previous problem. Clearly label any roots (R), y-intercept (YI), vertical asymptote(s) (VA); horizontal asymptote(s) (HA); Slant asymptote (SA); and/or holes (indicate with a hollow point).

$$f(x) = \frac{h(x)}{g(x)}$$



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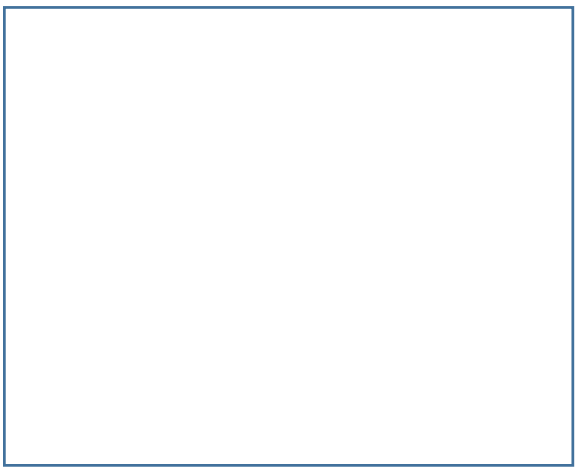
(15pts)

3. Using <u>your own</u> derivation of Pascal's triangle, determine the following for the binomial expansion of:

$$\left(-\frac{x^3}{2}-\frac{4}{x^7}\right)^{10}$$



a. The middle term.

b. The 7th term.

c. The coefficient of the term with no x.

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(20pts)

4. Find a polynomial with integer coefficients that has $1+\sqrt[3]{2}$ and $1+2i$ as roots.

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(5pts)

5. Solve the following radical equation:

$$x - 3 = \sqrt{30 - 2x}$$

(5pts)

6. Solve the equation: $3(2^{x+4}) = 350$, rounding the answer to three decimal places.

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(5pts)

7. Given $ln2 = 0.693$ and $ln4 = 1.386$, then find the following ONLY using properties of logarithms and basic arithmetic (you must show your work!)
   a. $ln8$
   b. $ln\sqrt{2}$
   c. $ln\frac{1}{64}$

(5pts)

8. Write as a single simplified term without logarithms:

$$10^{6logxy+logy-3logx}$$