

MATH 116

QUIZ 2

Name _____

Show all work for full credit on any problem. Clearly indicate all answers.

1. Write the standard form of the parabola and state the vertex: 1. _____

$$f(x) = -2x^2 - 4x - 5 \quad (2 \text{ points})$$

Vertex: _____

2. Find the quadratic function that has a minimum at (1, -2) and passes through (0, 0). 2. _____

3. Determine the left and right behavior of the graph: 3. _____

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

- a. Up to the left, down to the right
- b. Up to the left and right
- c. Down to the left, up to the right
- d. Down to the left and right
- e. None of these

4. Find all the real zeros by factoring: $f(x) = x^2 + 3x - 28$ 4. _____

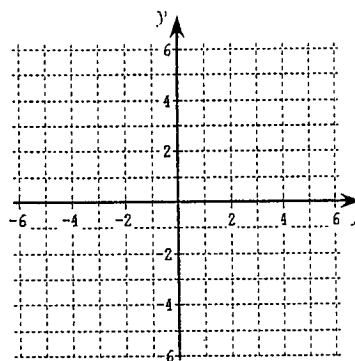
5. Divide using long division: $(6x^3 + 7x^2 - 10x - 6) \div (2x + 1)$ 5. _____

6. Use synthetic division to factor the polynomial completely if -2 is a zero: $f(x) = x^3 - 4x^2 - 7x + 10$ 6. _____

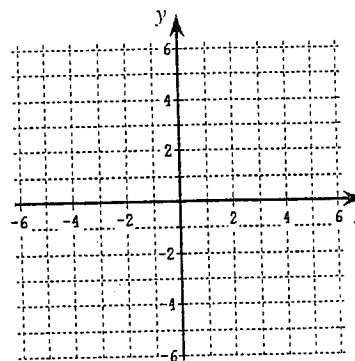
7. Use synthetic division to find $f(-3)$: $f(x) = 4x^3 + 3x + 10$ 7. _____

8. List **ALL POSSIBLE** rational zeros of the function:
 $f(x) = 2x^3 - 8x^2 + 3x - 6$ 8. _____

9. Find all the real zeros of the function and graph:
 $f(x) = 6x^4 + 32x^3 - 70x^2$ (2 points) 9. _____



10. Find all the real zeros of the function and graph:
 $f(x) = 2x^3 + 5x^2 - x - 6$ (2 points) 10. _____



11. Use a graphing utility to approximate the real zero of the function $f(x) = x^2 + 5x - 2$ in the interval $[0, 1]$. 11. _____
a. 0.259 b. 0.347 c. 0.388 d. 0.396

12. Use the Intermediate Value Theorem to estimate the real zero of 12. _____

$f(x) = 3x^3 - 2x^2 - 2$ in the interval $[1, 2]$.

- a. between 1.0 and 1.1
- b. between 1.1 and 1.2
- c. between 1.3 and 1.4
- d. between 1.7 and 1.8
- e. none of these

13. Perform the indicated operation and write the results in standard 13. _____

form: $(5 + 4i) + (-7 - 14i) - (-12 - i)$

14. Perform the indicated operation and write the results in standard 14. _____

form: $\frac{(2 - i)(3 + 4i)}{(2 + i)}$

15. Perform the indicated operation and write the results in standard 15. _____

form: $(3 - \sqrt{-9})(7 + \sqrt{-4})$

16. Find a fourth degree polynomial with real coefficients that 16. _____

has zeros: 2, -2, 3i, -3i

17. Find all the zeros of the function (real or complex). 17. _____

$f(x) = x^3 + 6x^2 + 12x + 7$

18. Write the polynomial in **completely factored form**:

$$f(x) = x^4 - x^2 - 20$$

18. _____

19. Find the vertical asymptotes: $f(x) = \frac{8x}{(x+5)^2}$

19. _____

20. Find the horizontal asymptotes (if any): $f(x) = \frac{12x}{2-x}$

20. _____

21. Match the graph with the correct function:

21. _____

a. $f(x) = \frac{1}{x^2 - 4}$

b. $f(x) = \frac{x^2}{x^2 - 4}$

c. $f(x) = \frac{x}{x^2 + 4}$

d. $f(x) = \frac{x}{x^2 - 4}$

22. Use a graphing utility to help sketch the graph of: $f(x) = \frac{x}{x^2 - 1}$ (2 points)

Indicate all asymptote lines.

