Algebra 2
Quiz 4.4-4.6

NAME_____

Write the letter for the best answer.

Factor each polynomial. Only one of the factors is listed for the correct answer.

1. $3x^3 + 21x^2 + 36x$

A. 3
B. $(x - 4)$
C. $(x + 3)$
D. $(x + 12)$

2. $2x^2 - 50$

A. 5
B. $(x - 25)$
C. $(x + 25)$
D. $(x - 5)$

3. $4x^2 + 18x - 10$

A. $(2x - 1)$
B. $(2x + 5)$
C. $(x - 5)$
D. $(4x - 2)$

4. $2x^2 - 20x - 48$

A. $2x$
B. $(x - 6)$
C. $(x + 2)$
D. $(x + 12)$

5. $x^3 + 3x^2 - 4x - 12$

A. x
B. $(x - 3)$
C. $(x + 2)$
D. $(x - 4)$

6. $6x^2 + 15x - 36$

A. $(x - 4)$
B. $(2x - 3)$
C. $(6x - 3)$
D. $(3x + 9)$

Determine if the binomial is a factor. If yes, factor completely (only one factor is listed).

7. $x^3 + 5x^2 - 2x - 24; x + 3$

A. No
B. Yes, $(x - 4)$
C. Yes, $(x - 3)$
D. Yes, $(x - 2)$

8. $x^3 + x^2 - 22x - 40; x - 5$

A. No
B. Yes, $(x - 4)$
C. Yes, $(x + 5)$
D. Yes, $(x + 2)$

Solve the equation.

9. $3x^3 - 27x = 0$

A. 0,3,-3
B. 3,-3
C. 0,9,-9
D. 9,-9

10. $3x^2 - 5x - 12 = 0$

A. $-\frac{1}{3}, 4$
B. $\frac{1}{3}, -4$
C. $-\frac{4}{3}, 3$
D. $\frac{4}{3}, -3$

11. $4x^3 + 20x^2 = 45 + 9x$

A. $-9, -\frac{9}{4}, \frac{9}{4}$
B. $9, -\frac{9}{4}, \frac{9}{4}$
C. $-5, -\frac{3}{2}, \frac{3}{2}$
D. $5, -\frac{3}{2}, \frac{3}{2}$

Find the zeros of each function by graphing.

12. $f(x) = x^4 + 2x^3 - 15x^2$

A. 0,5,-3
B. 0,3,-5
C. 0,1,-15
D. 0,15,-1

13. $f(x) = -x^4 + 9x^2$

A. 0,3,-3
B. 3,-3
C. 0,2,-2
D. 2,-2

Identify the number of solutions of the polynomial equation. Then find the solution(s).

14. $x^3 - x^2 - 6x - 24 = 0$

A. $3; -4, \frac{-3 \pm i\sqrt{5}}{2}$
B. $3; -4, 3 \pm \sqrt{15}$
C. $3; 4, \frac{-3 \pm i\sqrt{15}}{2}$
D. $3; 4, 3 \pm i\sqrt{15}$

15. $x^3 + 6x^2 + 18x + 20 = 0$

A. $3; -2, -2 \pm i\sqrt{6}$
B. $3; -2, 3 \pm 4\sqrt{3}$
C. $3; -2, \frac{6 \pm 4\sqrt{3}}{2}$
D. $3; -2, 3 \pm 2\sqrt{3}$

Find all the zeros of the polynomial function.

16. $x^4 - 4x^3 + 6x^2 - 4x - 80 = 0$

A. $-1, 6, 2 \pm 2i$
B. $1, -6, 2 \pm 4i$
C. $2, -4, 1 \pm 2i$
D. $-2, 4, 1 \pm 3i$

17. $x^4 - 6x^3 + 18x^2 - 14x - 39 = 0$

A. $1, 3, 3 \pm 2i$
B. $-1, 3, 2 \pm 3i$
C. $1, -3, 3 \pm 2i$
D. $-1, -3, 2 \pm 3i$

Write a polynomial function *f* of least degree that has rational coefficients and the given zeros.

18. $2, 3, -4$

A. $x^3 - x^2 - 12x + 20$
B. $x^3 - x^2 - 14x + 24$
C. $x^3 - 3x^2 + 6x + 16$
D. $x^3 + 3x^2 - 6x + 18$

19. $-2, 5, -i$

A. $x^4 - 3x^3 - 9x^2 - 3x - 10$
B. $x^4 + x^3 - 10x^2 + 2x - 14$
C. $x^3 + 2x^2 i + 6x^2 + xi - 10x - 14i$
D. $x^3 - 2x^2 i + 8x^2 - xi - 8x - 16i$

Determine the possible number of positive real zeros, negative real zeros, and imaginary zeros for the function.

20. $3x^3 - 2x^2 - 4x + 1$

A. $0+; 1 - or\ 3-; 2i\ or\ 0i$
B. $1+; 0 - or\ 2-; 2i\ or\ 0i$
C. $2 + or\ 0+; 1-; 0i\ or\ 2i$
D. $2 + or\ 0+; 0-; 1i\ or\ 3i$

21. $x^4 - 7x^3 - 5x^2 + x - 3$

A. $2 + or\ 0+; 2-; 2i\ or\ 0i$
B. $3 + or\ 1+; 0-; 3i\ or\ 1i$
C. $2 + or\ 0+; 0-; 2i\ or\ 0i$
D. $3 + or\ 1+; 1-; 0i\ or\ 2i$