Name: _____ Class: _____ Date: _____ ID: A

REVIEW NO CALCULATOR PORTION OF THE CFA COUNTY AND SPIRAL

Multiple Response
Identify one or more choices that best complete the statement or answer the question.

1. **NO CALCULATOR**
Select all expressions equivalent to $16(2)^{n-3}$.
a. $(2)^{4n-12}$
b. $(2)^{4n-3}$
c. $(2)^{n+1}$
d. $8(2)^{n-1}$
e. $8(2)^{n-2}$

2. **NO CALCULATOR**
Select all expressions equivalent to $32(2)^{n-3}$.
a. $(2)^{n+2}$
b. $(2)^{5n-3}$
c. $(2)^{5n-15}$
d. $8(2)^{n-1}$
e. $8(2)^{n-2}$

3. **No Calulator**
Select **TWO** that are a factor of the polynomial $(x-4)^6-1$
a. $x-5$
b. $x-4$
c. $x-3$
d. $x+5$

4. **No Calulator**
Select **TWO** that are a factor of the polynomial $(x-7)^{10}-1$
a. $x+8$
b. $x-8$
c. $x+6$
d. $x-7$
e. $x-6$

5. **No Calculator**
Select all the zeros for the following polynomial:
$f(x) = -5x^3(x-6)(x+2)(3x-1)$
a. 6
b. -6
c. 1
d. $-\frac{1}{3}$
e. 2
f. -2
g. 0
h. $\frac{1}{3}$

6. **NO CALCULATOR**
Select All possible soltuions to $\frac{3x^2-15x+2x-10}{12x^2+8x}$
a. $\frac{3x(x-5)+2(x-5)}{4x(3x+2)}$
b. $\frac{3x(x-5)-2(x-5)}{4x(3x+2)}$
c. $\frac{(3x-2)(x-5)}{4x(3x+2)}$
d. $\frac{(x-5)}{4}$
e. $\frac{(x-5)}{4x}$
f. $\frac{(3x+2)(x-5)}{4x(3x+2)}$

7. **SELECT ALL equivalent expressions for** $162x^2 - 72$
   a. $2(9x-6)^2$
   b. $2(81x-36)$
   c. $2(9x-6)(9x+6)$
   d. $18(3x^2-2)^2$
   e. $18(3x-2)(3x+2)$

8. Pick all that are equivalent
   $2a^4 - 2a^2b^2 + 3a^2b^2 - 3b^4$
   a. $(2a^2+3b^2)(a^2-b^2)$
   b. $(2a^2-3b^2)(a^2+b^2)$
   c. $(2a^2+3b^2)(a+b)(a-b)$
   d. $(2a^2+3b^2)(a-b)(a-b)$

9. **SELECT ALL equivalent expressions for** $3x^4 - 48$
   a. $3(x^4-16)$
   b. $3(x^4+16)$
   c. $3(x^2-4)(x^2+4)$
   d. $3(x-2)(x+2)(x^2+4)$
   e. $3(x-2)(x+2)(x+2)(x-2)$
   f. $3(x+2)^2(x-2)^2$

10. **Select All** possible values of x for the following equation $\sqrt{7x-40} = x-4$
    a. No Soltuion
    b. –7
    c. –8
    d. 7
    e. 8

Multiple Choice
Identify the choice that best completes the statement or answers the question.

11. **No Calculator**
    Consider the equation $x-5 = \sqrt{2x+12}$. Which statement is the first step for solving this equation?
    a. Subtract 5 from both sides to get $x = \sqrt{2x+12} - 5$.
    b. Add 5 to both sides to get $x = \sqrt{2x+12} + 5$.
    c. Square both sides to get $x^2 + 25 = 2x + 12$.
    d. Square both sides to get $x^2 - 10x + 25 = 2x + 12$.

12. **No Calulator**
    What is the solution to the equation $\sqrt{x+3} = -4$
    a. -19
    b. No Solution
    c. -7
    d. 13

13. **No Calulator**
    What is the solution to the equation $\sqrt{x-3} = -10$
    a. 103
    b. -97
    c. 7
    d. No Solution

14. **No Calculator**

Which solution is the factored form of $3x^2 + 7x - 6$

a. $(3x+2)(x+3)$
c. $(3x-3)(x+2)$
b. $(x+2)(3x-3)$
d. $(3x-2)(x+3)$

15. If $f(5) = 3$, then $f(x) \div (x-5)$ has a remainder of ?

a. 0
c. 5
b. –3
d. 3

16. Which is **not** a factor of $x^3 + x^2 - 4x - 4$

a. $x-1$
c. $x+2$
b. $x-2$
d. $x+1$

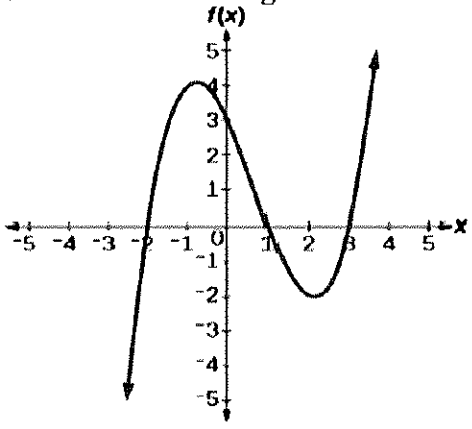
17. Using the Remainder theorem if the factor $x-3$ has a remainder of -12 which is true?

a. $f(3) = -12$
c. $f(3) = 12$
b. $f(-3) = -12$
d. $f(-3) = 12$

18. Given $f(2) = 0$ which is a factor?

a. $x-2$
c. $x-5$
b. $x+2$
d. $x+5$

19. Which of the following functions could represent the graph below?



a. $f(x) = (x-2)(x+1)(x+3)$
c. $f(x) = (x+1)(x-3)(x+2)$
b. $f(x) = -2(x-1)(x-3)(x+2)$
d. $f(x) = \frac{1}{2}(x-1)(x-3)(x+2)$

20. In 1980 Mary planted a Christmas tree that was 1 foot tall. In 1996 that same tree was 71 feet tall. Mary found the height of the tree can be modeled by the radical function $h(t) = \sqrt{kt} + 1$, where h(t) is the height of the tree in feet, t is the number of years since 1980, and k is a specific constant.

What is the value of k?

a. 17.50
c. 306.25
b. 51.04
d. 816.67

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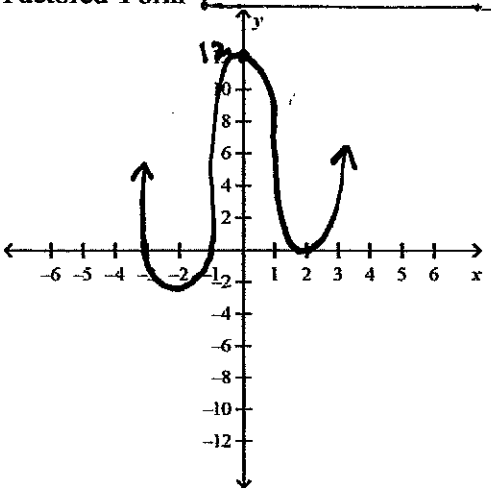
21. The formula for the speed of a falling object is $v = \sqrt{64d}$, where v is the speed of the object in feet per second and d is the distance the object has fallen, in feet. What distance has an object fallen if its speed is 75 feet per second?

a. 17.50
b. 87.89
c. 306.25
d. 816.67

22. Solve for x *given* $\frac{4}{4x+4} = \frac{3}{x-5}$

a. -1
b. 5
c. 4
d. -4

23. Select the equation that is equivalent to the graph: A) Zeros_____ B) Factored Form _____ C) Degree_____ D) Y Intercept _____



a. $x^3 - 9x^2 + 4x - 12$
b. $x^3 - 9x^2 + 4x + 12$
c. $x^4 - 9x^2 + 4x - 12$
d. $x^4 - 9x^2 + 4x + 12$

24. Factor $x^6 - 64$

a. $(x-2)(x+2)(x^2+2x+4)(x^2-2x+4)$
b. $(x^3-8)^2$
c. $(x-2)^2(x^2+2x+4)^2$
d. $(x^3+8)^2$

25. Consider the expression $(x^2 - 16)(x+2)$.

Select all the values of x for which $(x^2 - 16)(x+2) = 0$

A) -32	B) -16	C) -4	D) -2
E) 0	F) 2	G) 4	H) 8

26. A polynomial, f(x), is divided by four different linear expressions, as listed in the table. The resulting remainders after the division by each linear expression are as shown in the table.

Linear Expression	Remainder
$x-1$	0
$x+1$	–4
$x-3$	2
$x+3$	0

Which must be a root of the polynomial?

A) 3
B) 1
C) 2
D)-1

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Answer Section

MULTIPLE RESPONSE

1. C, E
2. A, D
3. A, C
4. B, E
5. A, F, G, H
6. A, E, F
7. B, C, E
8. A, C
9. A, C, D
10. D, E

MULTIPLE CHOICE

1. D
2. B
3. D
4. D
5. D
6. A
7. A
8. A
9. D
10. C
11. B
12. D
13. D
14. A

SHORT ANSWER

1. C D G
2. B