Review #2 for test on Polynomials Name_____

I. Perform the indicated operations and put all final answers in simplest form.

1. $\left(\frac{-2}{3}\right)^{-2} - \left(\frac{1}{4}\right)^{0}$

2. $\frac{\left(-3x^4y^{-1}\right)^{-2}}{4^{-1}x^{-5}y^{3}}$

3. $\frac{4^{2k+3}}{4^{3-2k}}$

4. $\left(2^{x+3}\right)^{2} \cdot 2^{3x-1}$

5. Solve for x: $\left(b^{2} \cdot b^{x}\right)^{3} = \frac{b^{x}}{b^{2}}$

II. 6. Express answers in scientific notation: a) $\frac{3 \times 10^{-6}}{\left(2 \times 10^{5}\right)\left(5 \times 10^{-3}\right)}$ b) $(4 \times 10^{3})(3.2 \times 10^{-7})$

III. Multiply.

7. $(3x-2)^{3}$

8. $(a+5b)^{5}$

IV. Use Synthetic Division:

9. $\left(2x^4 - 5x^2 - 20\right) \div (x+2)$

Use Long Division:

10. $\left(8x^3 - 30x + 10\right)(2x-3)^{-1}$

11. $(28x^5y^3 - 32x^2y^8 - 4x^2y^2) \div \left(-4x^2y^2\right)$

12. Use synthetic division: $(6x^3 - 28x^2 + 19x + 3)(3x - 2)^{-1}$

V. Factor the following completely!

13. $4y^{2a} + 11y^a - 3$

14. $y^{3n} - 1$

15. $16x^3 + 2$

16. $x^{2n} - 49$

17. $n^4 - 5n^2 + 4$

18. $n^2m + 3n^2 - 9m - 27$

19. $216a^3 - 125b^6$

20. $6y^4 - 2y^2 - 4$

21. $a^{6n} - 2a^{3n} - 15$

22. $2a^{4k} - 162$

23. $54 - 9k - 3k^2$

24. $8y^4 + 50x^4$

25. $12x^2 - 68x + 40$

26. $90n^2 - 160$

27. $16 - 10c + c^2$

. $64 + x^6$

29. $-x^2 + 2x - 1$

30. $15x^2 - 14xy - 8y^2$

Review Answers

1. $\frac{5}{4}$ $\frac{4}{9x^3y}$ 3. 4^{4k} or 16^k 4. 2^{5x+5} 5. -4

6. a) 3×10^{-9} b) 1.28×10^{-3} 7. $27x^3 - 54x^2 + 36x - 8$

8. $a^5 + 25a^4b + 250a^3b^2 + 1250a^2b^3 + 3125ab^4 + 3125b^5$ 9. $2x^3 - 4x^2 + 3x - 6 - \frac{8}{x+2}$

10. $4x^2 + 6x - 6 - \frac{8}{2x-3}$ 11. $-7x^3y + 8y^6 + 1$ 12. $2x^2 - 8x + 1 + \frac{5}{3x-2}$

13. $(4y^a - 1)(y^a + 3)$ 14. $(y^n - 1)(y^{2n} - y^n + 1)$ 15. $2(2x + 1)(4x^2 - 2x + 1)$

16. $(x^n + 7)(x^n - 7)$ 17. $(n + 1)(n - 1)(n + 2)(n - 2)$ 18. $(m + 3)(n - 3)(n + 3)$

19. $(6a - 5b^2)(36a^2 + 30ab^2 + 25b^4)$ 20. $2(3y^2 + 2)(y + 1)(y - 1)$

21. $(a^{3n} - 5)(a^{3n} + 3)$ 22. $2(a^k + 3)(a^k - 3)(a^{2k} + 9)$ 23. $3(6 + k)(3 - k)$

24. $2(4y^4 + 25x^4)$ 25. $4(3x - 2)(x - 5)$ 26. $10(3n + 4)(3n - 4)$

27. $(8 - c)(2 - c)$ 28. $(4 + x^2)(16 - 4x^2 + x^4)$ 29. $-1(x - 1)^2$

30. $(3x - 4y)(5x + 2y)$

FCC# Unit 4 Polynomial Functions Review#1

1. Find a polynomial equation having roots –2 and $3 + i$.

2. Divide $x^4 - 3x^3 + 18x^2 - 12x + 16$ by $x - 3$ using long division.

3. Find all zeros for $p(x) = 2x^4 + 3x^3 + 6x^2 + 12x - 8$ if $2i$ is a zero.

4. One root of $2x^3 - 10x^2 + 9x - 4 = 0$ is 4. Find the other roots.

5. If $3 + 2i$ is a zero of a polynomial, what has to be another zero?

6. Describe the end behavior of each: (a) $f(x) = x^5 - x^3 - x^2 + x + 2$; (b) $h(x) = -x^4 - 9x^2$

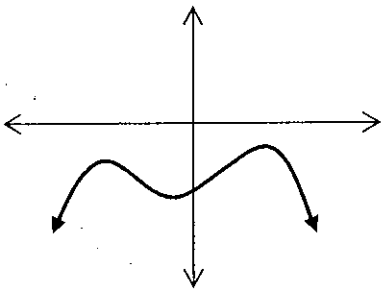
7. Approximate to the nearest tenth the real zeros of $f(x) = x^3 - 6x^2 + 8x - 2$. (Use a calculator)

8. For $y = x(x + 3)(x - 1)^2$, determine the zeros and their multiplicity.

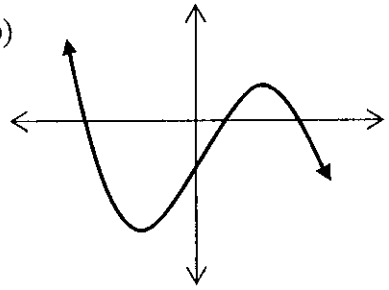
9. Write a polynomial function with zeros 1 and 2 (of multiplicity 3) in factored form.

10. Determine if the degree of the functions below is even or odd. How many real zeros does each have?

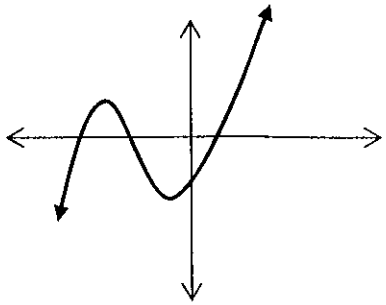
a)



b)



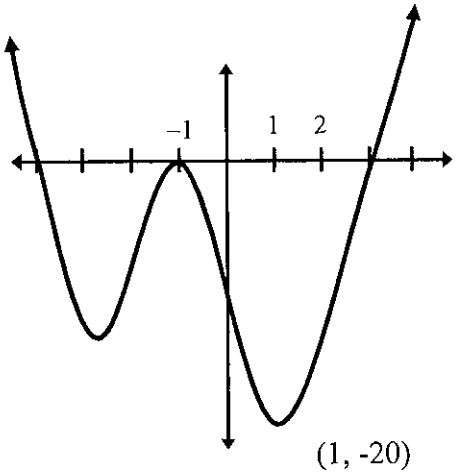
c)



11. Use synthetic division to find $f(-2)$ if $f(x) = 4x^5 + 10x^4 - 11x^3 - 22x^2 + 20x + 10$.

12. Factor: $2x^3 + 15x^2 - 14x - 48$ if $(x - 2)$ is a factor.

13. Write the following equation of the graph.



Put in factored form. _____

Sketch each of the following graphs:

14. $f(x) = (x-4)^3$

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

16. $y = -2(x+3)(x-3)(x+4)$

17. $Y = (x-3)^2 (x+1)^2$

KEY:

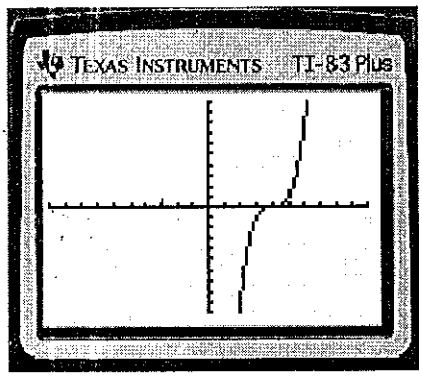
1) $x^3 - 4x^2 - 2x + 20 = 0$ 2) $x^3 - 5x^2 + 3x - 3$ R 7 3) $\{ \frac{1}{2}, -2, \pm 2i \}$ 4) $\{ \frac{1}{2} \pm \frac{1}{2}i \}$ 5) $3 - 2i$

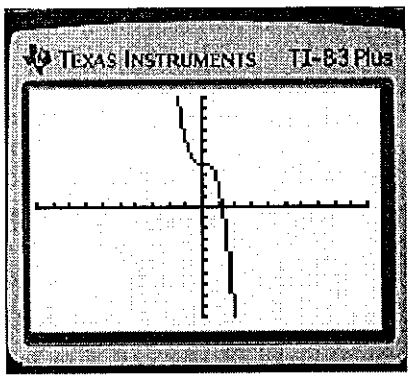
6) (a) low to high (b) low to low 7) 0.3, 1.5, 4.2 8) $\{0, -3, 1$ (DR) $\}$ 9) $y = (x - 1)(x - 2)^3$

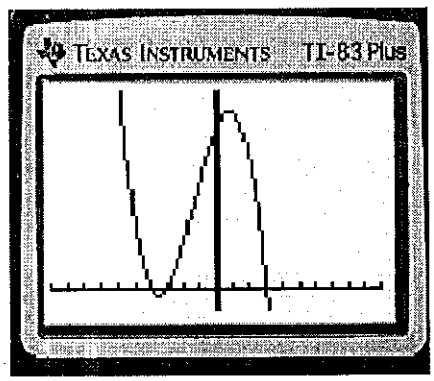
10) (a) even, none (b) odd, 3 (c) odd, 3 11) $f(-2) = 2$ 12) $(x - 2)(2x + 3)(x + 8)$

13.) $y = (-1/2)(x + 4)(x + 1)^2(x - 3)$

Graphs 14-17 done in class

14. 

15. 

16. 

17.