

## 5.1-5.2 Review

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

Cubic monomial

2.  $6 - 2x^3 - 4 + x^3$   
 $-x^3 + 2$

Cubic Binomial

3.  $6x - 7x$   
 $-x$

Linear monomial

4.  $a^3(a^2 + a + 1)$   
 $a^5 + a^4 + a^3$

Quintic Trinomial

5.  $x(x+5) - 5(x+5)$   
 $x^2 + 5x - 5x - 25$   
 $x^2 - 25$

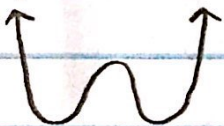
Quadratic Binomial

6.  $p(p-5) + 6$   
 $p^2 - 5p + 6$

Quadratic Trinomial

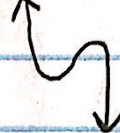
7. pos. even

up-up 3 turns



8. neg. odd

up-down 2 turns



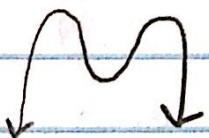
9. pos. even

up-up 1 turn



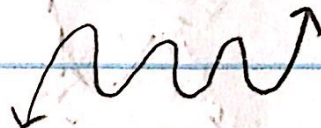
10. neg. even

down-down 3 turns



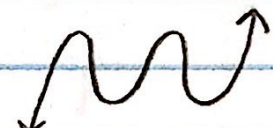
11. pos. odd

down-up 6 turns



12. pos. odd

down-up 4 turns



13.  $-16 \quad 1 \quad 4 \quad 5 \quad 16$

1  $+17 \quad +3 \quad +1 \quad +11$

2  $-14 \quad -2 \quad +10$

3  $+12 \quad +12$

3rd degree  $\rightarrow$  Cubic

14.  $22 \quad 9 \quad 10 \quad 7 \quad 6 \quad 37 \quad 154$

1  $-13 \quad +1 \quad -3 \quad -1 \quad +31 \quad +117$

2  $+14 \quad -4 \quad +2 \quad +32 \quad +86$

3  $-18 \quad +6 \quad +30 \quad +54$

4  $+24 \quad +24 \quad +24$

4th degree  $\rightarrow$  Quartic

15. The function is positive-even, therefore it will have an end behavior of up-up. The student thought the function was negative-even.

$$16. (4s^4 - s^2 - 3) - (3s - s^2 - 5)$$

$$4s^4 - s^2 - 3 - 3s + s^2 + 5$$

$$4s^4 - 3s + 2$$

Quartic Trinomial

$$17. b(b-3)^2 = b[(b-3)(b-3)]$$

$$b(b^2 - 6b + 9)$$

$$b^3 - 6b^2 + 9b$$

Cubic Trinomial

$$18. 2x^3 + 10x^2 + 12x \quad \text{d-u}$$

$$2x(x^2 + 5x + 6)$$

$$2x(x+2)(x+3)$$

$$x=0, -2, -3$$

all cross

$$19. x^4 - x^3 - 6x^2 \quad \text{up-up}$$

$$x^2(x^2 - x - 6)$$

$$x^2(x-3)(x+2)$$

$$x=0 \text{ (mult 2)}, 3, -2$$

bounce cross cross

$$20. -3x^3 + 18x^2 - 27x \quad \text{up-down}$$

$$-3x(x^2 - 6x + 9)$$

$$-3x(x-3)(x-3)$$

$$x=0 \quad x=3 \text{ (mult 2)}$$

cross bounce

$$21. x^3 - 2x^2 + x \quad \text{up-down}$$

$$x(x^2 - 2x + 1)$$

$$x(x-1)(x-1)$$

$$x=0, 1 \text{ (mult 2)}$$

cross bounce

$$22. x = -1, 1, 3 \quad \text{d-u}$$

mult of 1

$$23. x = -2, 3 \quad \text{up-up}$$

(mult 1)

$$24. x = 6, -3 \quad \text{up-up}$$

mult of 1

$$25. x = -4 \text{ (mult 2)}, -1 \text{ (mult 1)} \quad \text{d-u}$$

$$26. (x+1)(x-3)(x-4)$$

$$(x^2 - 2x - 3)(x-4)$$

$$x^3 - 4x^2 - 2x^2 + 8x - 3x + 12$$

$$x^3 - 6x^2 + 5x + 12$$

$$27. (x-1)(x-1)(x-2)$$

$$(x^2 - 2x + 1)(x-2)$$

$$x^3 - 2x^2 - 2x^2 + 4x + x - 2$$

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

$$28. (x+3)x \cdot x(x-5)$$

$$x^2(x^2 - 2x - 15)$$

$$x^4 - 2x^3 - 15x^2$$

$$29. x = 5 \text{ (mult 3)} \quad 30. x^4 - 8x^3 + 16x^2$$

$$x^2(x^2 - 8x + 16)$$

$$x^2(x-4)(x-4)$$

$$x=0 \text{ (mult 2)}, 4 \text{ (mult 2)}$$