Test 3 Review M28

1. $18x - 9$
$9(2x - 1)$

2. $18x^3 - 6x^2 + 10x$
$2x(9x^2 - 3x + 5)$

3. $18x^8y^7 - 60x^4y^5 - 48x^2y^2$
$6x^2y^2(3x^6y^5 - 10x^2y^3 - 8)$

4. $20m^9 - 8m^5 - 16m^2$
$4m^2(5m^7 - 2m^3 - 4)$

5. $12p + 6q - 6$
$6(2p + q - 1)$

6. $(2x + 8) + (xy + 4y)$
$2(x + 4) + y(x + 4)$
$(x + 4)(2 + y)$

7. $(xy + y) + (7x + 7)$
$y(x + 1) + 7(x + 1)$
$(x + 1)(y + 7)$

8. $(5xy + 20x) + (9y + 36)$
$5x(y + 4) + 9(y + 4)$
$(y + 4)(5x + 9)$

9. $(15x^2 - 12x) + (10x - 8)$
$3x(5x - 4) + 2(5x - 4)$
$(5x - 4)(3x + 2)$

10. $(10x^6 + 15x^3) + (-8x^3 - 12)$

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

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

11. $x^2 - x - 12$ Subt = 1

$(x+3)(x-4)$ c = 12

$3x$
$-4x$
$-1x$

1.12
2.6
3.4

12. $x^2 + 7x - 8$ Subt = 7

$(x+8)(x-1)$ c = 8

$8x$
$-1x$
$7x$

1.8

13. $5x - 24 + x^2$

$x^2 + 5x - 24$ Subt = 5

$(x+8)(x-3)$ c = 24

$8x$
$-3x$
$5x$

3.8

14. $x^2 + 12xy + 27y^2$ Add = 12

$(x+3y)(x+9y)$ c = 27

$3xy$
$9xy$
$12xy$

3.9

15. $x^2 + 2xy - 15y^2$

Subt = 2
c = 15
3.5

$(x + 5y)(x - 3y)$

$5xy$
$-3xy$
$2xy$

16. $2x^2 - 10x + 12$

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

Add = 5
c = 6
2.3

$2(x - 2)(x - 3)$

$-2x$
$-3x$
$-5x$

17. $x^3 - x^2 - 12x$

$x(x^2 - x - 12)$

Subt = 1
c = 12
3.4

$x(x + 3)(x - 4)$

$3x$
$-4x$
$-1x$

18. $5x^2 + 19x - 4$

Subt = 19
a = 5 c = 4

1.5	1.4	4, 5
	2.2	2, 10
	4.1	1, 20

$(1.x + 4)(5x - 1)$

$20x$
$-1x$
$19x$

19. $12y^2 - 17y + 6$ Add = 17

$(3y - 2)(4y - 3)$

$-8y$
$-9y$
$-17y$

$a=12$ $c=6$

~~1·12~~	1·6	6,12	12,6	18,4
~~2·6~~	(2·3)	3,24	6,12	(9,8)
(3·4)	3·2	2,36	4,18	
	6·1	1	2,36	

20. $6z^2 - 5z - 6$ Subt = 5

$(2z - 3)(3z + 2)$

$-9z$
$+4z$
$-5z$

$a=6$ $c=6$

~~1·6~~	1·6	6,6	12,3
(2·3)	2·3	3,12	6,6
	(3·2)	2,18	4,9
	6·1	1,36	

21. $6x^2 + 5xy - 6y^2$ Subt = 5

$a=6$ $c=6$

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

$9xy$
$-4xy$
$5xy$

22. $20x^2 + 27x + 9$ Add = 27

$(4x + 3)(5x + 3)$

$15x$
$12x$
$27x$

$a=20$ $c=9$

1·20	1·9	9,20	18,10	36,
2·10	(3·3)	3,60	6,30	12,15
(4·5)	9·1	1,180	2,90	

23. $4x^2 - 14x - 8$

$2(2x^2 - 7x - 4)$

Sub+ = 7, a=2, c=4

1·2 | 1·4 4,2 | 2·2 2,4 | 4·1 1,8

$2(4x + 1)(2x - 4)$

$+1x - 8x = -7x$

24. $-64x^3 + 32x^2 + 12x$

$-4x(16x^2 - 8x - 3)$

Sub+ = 8, a=16, c=3

1·16 | 1·3 3,16 6,8 12,4 | 2·8 1,48 2,24 | 4·4 3·1

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

$4x - 12x = -8x$

25. $z^2 + 2z + 1$

Add = 2, c=1

1·1

$(z + 1)(z + 1)$

$(z+1)^2$

26. $49x^2 - 42x + 9$

$(7x - 3)(7x - 3)$

$-21x - 21x = -42x$

27. $x^4 - 6x^2 + 9$

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

$-3x^2 - 3x^2 = -6x^2$

28. $z^2 - 81$

$(z + 9)(z - 9)$

29. $16 - 25x^2$

$(4 + 5x)(4 - 5x)$

30. $25x^2 - 9y^2$

$(5x+3y)(5x-3y)$

31. $81x^2 - 49$

$(9x+7)(9x-7)$

32. $t^3 + 8 = (t+2)(t^2 - 2t + 4)$

33. $x^3 - 8 = (x-2)(x^2 + 2x + 4)$

34. $125 - t^3 = (5-t)(25 + 5t + t^2)$

35. $27p^3 + 1 = (3p+1)(9p^2 - 3p + 1)$

36. $(x-2)(x+6) = 0$

$x-2=0$ $\quad x=2$

$x+6=0$ $\quad x=-6$

37. $x(6x+3) = 0$

$x=0$

$6x+3=0$

$\frac{6x}{6} = \frac{-3}{6}$

$x = -\frac{1}{2}$

39. $x^2 - x = 6$

$x^2 - x - 6 = 0$

$(x+2)(x-3) = 0$

$2x$

$-3x$

$-x$

subt = 1

$c = 6$

$2 \cdot 3$

$x+2=0$ $\quad x=-2$

$x-3=0$ $\quad x=3$

40. $x^2 + 2x = 63$

$x^2 + 2x - 63 = 0$

$(x+9)(x-7) = 0$

$9x$

$-7x$

$2x$

subt = 2

$c = 63$

$7 \cdot 9$

$x+9=0$ $\quad x=-9$

$x-7=0$ $\quad x=7$

41. $4x^2 - 3x - 7 = 0$ Subt = 3

$a = 4$ $c = 7$

1·4 | 1·7 → 7, 4

2·2 | 7·1

$(x+1)(4x-7) = 0$

$4x - 7x = -3x$

$x + 1 = 0$ $\quad 4x - 7 = 0$

$x = -1$ $\quad \frac{4x}{4} = \frac{7}{4}$

$x = 7/4$

42. $\frac{18x^3}{6x^2} = \frac{3x^2}{1} = 3x^2$

43. $\frac{36}{4m-12} = \frac{9 \cdot 4}{4(m-3)} = \frac{9}{m-3}$

44. $\frac{7x+7y}{x+y} = \frac{7(x+y)}{1(x+y)} = 7$

45. $\frac{9-m}{m-9}$ $\quad \frac{-(-9+m)}{(m-9)} = -\frac{(m-9)}{(m-9)} = -1$

46. $\frac{5x-25}{x^2-25} = \frac{5(x-5)}{(x+5)(x-5)} = \frac{5}{x+5}$

47. $\frac{3x+2}{6x^2+19x+10} = \frac{(3x+2)1}{(2x+5)(3x+2)} = \frac{1}{2x+5}$

Add = 19

$a = 6$ $\quad c = 10$

1·6

1·10 | 10,6 | 20,3

2·3 | 2·5 | 5,12 | 10,6

5·2 | 2,30 | 4,15

10·1 | 1,60

48. $\dfrac{y^2+6y+8}{y^2+12y+32} = \dfrac{(y+2)(y+4)}{(y+4)(y+8)}$

Add = 6, c = 8, 2·4

Add = 12, c = 32, 4·8

$= \dfrac{y+2}{y+8}$

49. $\dfrac{(x^2+x)}{6} \cdot \dfrac{48}{x+1}$

$\dfrac{x(x+1)\cdot 8\cancel{48}}{1\cancel{6}\,(x+1)} = \dfrac{8x}{1} = 8x$

50. $\dfrac{x^2+5x}{7} \cdot \dfrac{4}{(2x+10)} = \dfrac{x(x+5)\cdot\cancel{4}2}{7\cdot\cancel{2}(x+5)} = \dfrac{2x}{7}$

51. $\dfrac{(x^2-x^2)}{(x+x)} \cdot \dfrac{(x)}{x^2-xx} = \dfrac{(x+x)(x-x)\cdot x}{(x+x)\cdot x(x-x)} = 1$

52. $\dfrac{x^2+17x+72}{x^2+16x+64} \cdot \dfrac{x^2+10x+16}{x^2+11x+18}$

Add = 17, c = 72, 8·9

Add = 16, c = 64, 8·8

$\dfrac{(x+8)(x+9)\cdot(x+8)(x+2)}{(x+8)(x+8)\cdot(x+9)(x+2)} = 1$

Add = 10, c = 16, 8·2

Add = 11, c = 18, 9·2