Factoring Assignment

Factor completely:

1. $20ax^2 + 60ax + 45a$
2. $5x^3 – 5cx^2 + 10x^2 – 10xc$
3. $X^4 – 256$
4. $13x^4 – 13x^3 – 260x^2$
5. $96mx^2 + 232mx + 120m$
6. $27a^3 – 48a$
7. $a^2 – 4ab + 4b^2 – 4$
8. $54x^2y^2 – 63xy^2 – 27y^2$
9. $r^2 – rt – 5r + 5t$
10. $12am^2 + 6amn – 30am – 15an$
11. $5x^3 – 15x^2y – 90xy^2$
12. $16a^4 – 81b^4$
13. $72ax^2 – 84ax – 60a$
14. $84x^4y^2 – 4x^3y^3 – 8x^2y^4$
15. $2a^3z + 6a^2z^2 + 10a^2z + 30az^2$
16. $p^2 + pq + tp + tq$
17. $54x^2y + 63xy + 9y$
18. $8x^4 + 88x^3 + 240x^2$
19. $90a^2x^2 – 6a^2x – 12a^2$
20. $X^2 + 6xy + 9y^2 – 1$
21. $16 – x^4$
22. $6a^3 + 6a^2b – 18a^2 – 18ab$
23. $63x^3 + 42x^2 + 7x$
24. $24p^3 – 24p^2q + 56p^2 – 56pq$
25. $28x^4 – 175x^2$
26. $48tx^2 – 32tx – 60t$
27. $5x^5 + 50x^4 + 105x^3$
28. $14xyz + 21yz + 14xzt + 21zt$
29. $60a^3b – 78a^2b^2 – 18ab^3$
30. $625 – 16a^4$

Answers to Factoring Assignment

1. $5a(4x^2+12x+9)$
   $(5a)(2x+3)^2$

2. $p(p+q)+t(p+q)$
   $(p+t)(p+q)$

3. $5x^2(x-c)+10x(x-c)$
   $(5x^2+10x)(x-c)$
   $(5x)(x+2)(x-c)$

4. $9y(6x^2+7x+1)$
   $(9y)(6x+1)(x+1)$

5. $(x^2+16)(x^2-16)$
   $(x^2+16)(x+4)(x-4)$

6. $8x^2(x^2+17x+30)$
   $(8x^2)(x+5)(x+6)$

7. $13x^2(x^2-x-20)$
   $13x^2(x-5)(x+4)$

8. $6a^2(15x^2-x-2)$
   $6a^2(5x-2)(3x+1)$

9. $8m(12m^2+29m+15)$
   $(8m)(3x+5)(4x+3)$

10. $(x+3y)^2-1$
    $(x+3y+1)(x+3y-1)$

11. $3a(9a^2-16)$
    $3a(3a+4)(3a-4)$

12. $(4-x^2)(4+x^2)$
    $(2+x)(2-x)(4+x^2)$

13. $(a-2b)^2-4$
    $(a-2b+2)(a-2b-2)$

14. $6a(a^2+ab-3a-3b)$
    $6a(a-3)(a+b)$

15. $9y^2(6x^2-7x-3)$
    $9y^2(3x+1)(2x-3)$

16. $7x(9x^2-6x+1)$
    $7x(3x-1)(3x-1)$
    $7x(3x-1)^2$

17. $r(r-t)-5(r-t)$
    $(r-5)(r-t)$

18. $8p(3p^2-3pq+7p-7q)$
    $8p(3p+7)(p-q)$

19. $6am(2m+n)-15a(2m+n)$
    $(2m+n)(6am-15a)$
    $(2m+n)(3a)(2m-3)$

20. $7x^2(4x^2-25)$
    $7x^2(2x+5)(2x-5)$

21. $5x(x-6y)(x+3y)$

22. $4t(12x^2-8x-15)$
    $4t(2x-3)(6x+5)$

23. $(4a^2+9b^2)(4a^2-9b^2)$
    $(4a^2+9b^2)(2a+3b)(2a-3b)$

24. $5x^3(x+7)(x+3)$

25. $12a(6x^2-7x-5)$
    $12a(3x-5)(2x+1)$

26. $7z(2x+3)(y+t)$

27. $4x^2y^2(21x^2-xy-2y^2)$
    $4x^2y^2(7x+2y)(3x-y)$

28. $6ab(10a^2-13ab-6b^2)$

29. $2a^2z(a+5)(a-3z)$

30. $(25+4a^2)(25-4a^2)$
    $(25+4a^2)(5-2a)(5+2a)$