Getting Ready for the Midterm

Exponent Laws

Simplify as fully as possible.

1. $(a^3)(a^5) = a^8$

2. $(p)(p^4) = p^5$

3. $(4^5)(4^3) = 4^8$

4. $(a^2)(a^3)(a^4) = a^9$

5. $2b^6 \times b^{11} = 2b^{17}$

6. $(4a^3)(3a^2) = 12a^5$

7. $(-9x^4)(-6x^3) = 54x^7$

8. $(3a^3b)(4a^2b^7) = 12a^5b^8$

9. $(3x^2y)(4xy^2)(-2x^3y) = -24x^6y^4$

10. $(3x^4y^3z^2)(5x^2y^4) = 15x^6y^7z^2$

11. $(-3)(6a^2b)(-2a^3b^4) = 36a^5b^5$

12. $\dfrac{x^6}{x^2} = x^4$

13. $t^{12} \div t^7 = t^5$

14. $\dfrac{3^7}{3^5} = 3^2$

15. $\dfrac{x^5y^8}{xy^2} = x^4y^6$

16. $\dfrac{a^8b^{12}c^{16}}{a^4b^6c^4} = a^4b^6c^{12}$

17. $\dfrac{9y^5}{3y} = 3y^4$

18. $40x^7y^3 \div 8y^3 = 5x^7$

19. $\dfrac{-18k^5j^4}{9j^4k^2} = -2k^3$

20. $\dfrac{20b^5}{-4} = -5b^5$

21. $(15x^4) \div (10x^3) = 1.5x$

22. $(x^2)^3 = x^6$

23. $(5^8)^2 = 5^{16}$

24. $(a^3b^2)^4 = a^{12}b^8$

25. $(3x^4)^2 = 9x^8$

26. $(3^4)^2 = 3^8$

27. $(c^6d)^3 = c^{18}d^3$

28. $(x^4y^3z^3)^3 = x^{12}y^9z^9$

29. $(-3a^4b^2)^3 = -27a^{12}b^6$

30. $(p^4q)^3 = p^{12}q^3$

31. $(-x^4y^8)^7 = -x^{28}y^{56}$

32. $(-2xy^7)^2 = 4x^2y^{14}$

33. $(-y^6)^{11} = -y^{66}$

34. $\dfrac{(x^4)(x^3)}{x^2} = x^5$

35. $[(y^2)(y^4)]^2 = y^{12}$

36. $\left(\dfrac{x^9}{x^3}\right)^2 = x^{12}$

37. $\dfrac{(8x^5y^3)(-3x^4y)}{12x^6} = -2x^3y^4$

38. $\dfrac{(7^5)(7^4)}{7^6} = 7^3$

39. $\left[\dfrac{(x^5)(x^2)}{x^4}\right]^2 = x^6$

Expanding and Simplifying

1. $6(x + 3)$
$= 6x + 18$

2. $2(3x - 4)$
$= 6x - 8$

3. $-3(x + y) - 3$
$= -3x - 3y - 3$

4. $5(m - 4)$
$= 5m - 20$

5. $x(x + y)$
$= x^2 + xy$

6. $y(y^2 - 2) + 2$
$= y^3 - 2y + 2$

7. $t(3t + 4)$
$= 3t^2 + 4t$

8. $4(y - 5)$
$= 4y - 20$

9. $-x(x + 2) + x$
$= -x^2 - 2x + x$

10. $-3(m - n)$
$= -3m + 3n$

11. $2(f + 4) + 3(f + 6) - 6$
$= 5f + 20$

12. $4(t - 2) - 3(t + 1)$
$= t - 11$

13. $7(m - 3) - 2(6m - 4)$
$= -5m - 13$

14. $-4(x + 1) + 3(-4x + 2)$
$= -16x + 2$

15. $5(2t + 1) + 3(t + 2)$
$= 13t + 11$

16. $4(x - 3) + 2(5 - x)$
$= 2x - 2$

17. $x(x + 4) + x(x - 3) + 5$
$= 2x^2 + x + 5$

18. $t(t + 1) - 4(t + 2)$
$= t^2 - 3t - 8$

19. $m(m - 4) + 2(m + 1)$
$= m^2 - 2m + 2$

20. $3(x + 2) + 4x$
$= 7x + 6$

21. $c + c + c + c$
$= 4c$

22. $p \times p \times p \times p$
$= p^4$

23. $2r \times 5p$
$= 10rp$

24. $2x \times y \times 3$
$= 6xy$

25. $5x + 3y - 2x + y$
$= 3x + 4y$

26. $5(3x + 7)$
$= 15x + 35$

27. $4a + 5b - 3b + a$
$= 5a + 2b$

28. $x^3 + x^3$
$= 2x^3$

29. $5p + 2q - 3p - 3q$
$= 2p - q$

30. $3g + 5g$
$= 8g$

31. $2r \times 5p$
$= 10rp$

32. $5(2y - 3)$
$= 10y - 15$

33. $2(3x + 4) - 3(4x - 5)$
$= -6x + 23$

34. $4x + 7y + 2x - 3y$
$= 6x + 4y$

35. $2pq + pq$
$= 3pq$

36. $3a + 4b - 2a - b$
$= 2a + 3b$

37. $5x^2 + 2x - 3x^2 - x$
$= 2x^2 + x$

38. $4(2x - 3)$
$= 8x - 12$

39. $p(q - p^2)$
$= pq - p^3$

40. $5(3p + 2) - 2(5p - 3)$
$= 5p + 16$

41. $p^2 + p^2 + p^2$
$= 3p^2$