Exercise 2J

Question 21:
We know that,
Since $a^3 - b^3 = (a - b)(a^2 + ab + b^2)$
Therefore,
$(a + b)^3 - (a - b)^3$
$= [a + b - (a - b)] [(a + b)^2 + (a + b)(a - b) + (a - b)^2]$
$= (a + b - a + b) [a^2 + b^2 + 2ab + a^2 - b^2 + a^2 + b^2 - 2ab]$
$= 2b (3a^2 + b^2)$.

Question 22:
$x - 8xy^3$
$= x (1 - 8y^3)$
$= x [(1)^3 - (2y)^3]$
$= x (1 - 2y) [(1)^2 + 1 (2y) + (2y)^2]$
Since $a^3 - b^3 = (a - b)(a^2 + ab + b^2)$
$= x (1 - 2y) (1 + 2y + 4y^2)$.

Question 23:
$32x^4 - 500x$
$= 4x (8x^3 - 125)$
$= 4x [(2x)^3 - (5)^3]$
$= 4x [(2x - 5) [(2x)^2 + 2x (5) + (5)^2]$
Since $a^3 - b^3 = (a - b)(a^2 + ab + b^2)$
$= 4x (2x - 5) (4x^2 + 10x + 25)$.

Question 24:
$3a^7b - 81a^4b^4$
$= 3a^4b (a^3 - 27b^3)$
$= 3a^4b [(a)^3 - (3b)^3]$
$= 3a^4b (a - 3b) [(a)^2 + a (3b) + (3b)^2]$
Since $a^3 - b^3 = (a - b)(a^2 + ab + b^2)$
$= 3a^4b (a - 3b) (a^2 + 3ab + 9b^2)$.

********** END **********