

II Find the value of a for the following polynomials to be perfect squares.

(a) $4x^4 - 12x^3 + 37x^2 - 42x + a$

Solution: $4x^4 - 12x^3 + 37x^2 - 42x + a$ is a perfect square, to find a

	$2 \quad -3 \quad +7$	
2	$\begin{array}{r} 4 \quad -12 \quad 37 \quad -42 \quad a \\ 4 \end{array}$	
$4 - 3$	$\begin{array}{r} -12 \quad 37 \\ -12 \quad 9 \end{array}$	
$4 \quad -6 \quad 7$	$\begin{array}{r} 28 \quad -42 \quad a \\ 28 \quad -42 \quad 49 \end{array}$	
	$\begin{array}{r} 0 \end{array}$	

$\therefore a = 49$

(b) $x^4 - 4x^3 + 10x^2 - ax + 9$

Solution: $x^4 - 4x^3 + 10x^2 - ax + 9$ is a perfect square, to find a

	$1 \quad -2 \quad +3$	
1	$\begin{array}{r} 1 \quad -4 \quad 10 \quad -a \quad 9 \\ 1 \end{array}$	
$2 - 2$	$\begin{array}{r} -4 \quad 10 \\ -4 \quad 4 \end{array}$	
$2 - 4 + 3$	$\begin{array}{r} 6 \quad -a \quad 9 \\ 6 \quad -12 \quad 9 \end{array}$	
	$\begin{array}{r} 0 \end{array}$	