6.7
Page 369
25-29 odd
39-43 odd

(25) $f(x) = x^4 + 7x^3 - x^2 - 67x - 60$

-1 | 1 | 7 | -1 | -67 | -60 $\quad (x+1)$
| | -1 | -6 | 7 | 60
| 1 | 6 | -7 | -60 | 0

$x^3 + 6x^2 - 7x - 60$

-4 | 1 | 6 | -7 | -60 $\quad (x+4)$
| | -4 | -8 | 60
| 1 | 2 | -15 | 0

$x^2 + 2x - 15$

-5 | 1 | 2 | -15 $\quad (x+5)$
| | -5 | 15
| 1 | -3 | 0

$(x-3)$

$f(x) = (x+1)(x+4)(x+5)(x-3)$

zeros: $-1, -4, -5, 3$

(27) $f(x) = x^3 - x^2 + 49x - 49$

1 | 1 | -1 | 49 | -49 (x-1)

	1	0	49	0
		1	0	49
1	1	0	49	0

$x^2 + 49$

$(x-7i)(x+7i)$

$f(x) = (x-1)(x-7i)(x+7i)$

Zeros: $1, 7i, -7i$

(29) $f(x) = x^4 + 6x^3 + 14x^2 + 54x + 45$

-1 | 1 | 6 | 14 | 54 | 45 (x+1)

	1	5	9	45	0
		-1	-5	-9	-45
-1	1	5	9	45	0

$x^3 + 5x^2 + 9x + 45$

-5 | 1 | 5 | 9 | 45 (x+5)

	1	0	9	0
		-5	0	-45
-5	1	5	9	45

$x^2 + 9$

$(x-3i)(x+3i)$

$f(x) = (x+1)(x+5)(x-3i)(x+3i)$

Zeros: $-1, -5, 3i, -3i$

(39) zeros: $-2, -4, -7$

$f(x) = (x+2)(x+4)(x+7)$

$(x^2+6x+8)(x+7)$

$x^3+7x^2+6x^2+42x+8x+56$

$\boxed{f(x) = x^3+13x^2+50x+56}$

(41) zeros: $3i, -3i, 5$

$f(x) = (x-3i)(x+3i)(x-5)$

$= (x^2+3ix-3ix-9i^2)(x-5)$

$= (x^2-9(-1))(x-5)$

$= (x^2+9)(x-5)$

$\boxed{f(x) = x^3-5x^2+9x-45}$

(43) zeros: $i, -3i, 3i, \boxed{-i}$

$f(x) = (x+i)(x-i)(x+3i)(x-3i)$

$= (x^2+ix-ix-i^2)(x^2-3ix+3ix-9i^2)$

$= (x^2-(-1))(x^2-9(-1))$

$= (x^2+1)(x^2+9)$

$\boxed{f(x) = x^4+10x^2+9}$