pg 337 # 2-16 even & 15

2. 2 roots
2 real, 0 imag.
0 real, 2 imag.

$\frac{\text{factors of } 7}{\text{factors of } 3}$ $\quad \frac{\pm 1 \quad \pm 7}{\pm 1 \quad \pm 3}$

-7
$-\frac{7}{3}$
-1
$-\frac{1}{3}$
$\frac{1}{3}$
1
$\frac{7}{3}$
7

10. $x^3 - 3x^2 + x - 3$

$\frac{\text{factors of } 3}{\text{factors of } 1}$

x	y
-3	60
-1	-8
1	-4
3	0

3)

	1	-3	1	-3
		3	0	-3
	1	0	1	0

$x^2 + 1 = 0$
$x^2 = -1$
$x = \pm i$

real zero : 3 imaginary zeros : $\pm i$

Answers for Lesson 6-6, pp. 337–338 Exercises

1. 3 complex roots; number of real roots: 1 or 3
possible rational roots: ± 1

2. 2 complex roots; number of real roots: 0 or 2
possible rational roots: $\pm\frac{1}{3}, \pm\frac{7}{3}, \pm 1, \pm 7$

3. 4 complex roots; number of real roots: 0, 2, or 4
possible rational roots: 0

4. 5 complex roots; number of real roots: 1, 3, or 5
possible rational roots: $\pm\frac{1}{2}, \pm 1, \pm\frac{5}{2}, \pm 5$

5. 7 complex roots; number of real roots: 1, 3, 5, or 7
possible rational roots: $\pm 1, \pm 3$

6. 1 complex root number of real roots: 1
possible rational roots: $\pm\frac{1}{4}, \pm\frac{1}{2}, \pm 1, \pm 2, \pm 4, \pm 8$

7. 6 complex roots; number of real roots: 0, 2, 4, or 6
possible rational roots: $\pm\frac{1}{2}, \pm 1, \pm\frac{7}{2}, \pm 7$

8. 10 complex roots; number of real roots: 0, 2, 4, 6, 8, or 10
possible rational roots: ± 1

9. $-1, \frac{1 \pm i\sqrt{7}}{4}$

10. $3, \pm i$

11. $4, \frac{1 \pm i\sqrt{3}}{2}$

12. $2, \pm\sqrt{3}$

13. $\pm 2, \pm\sqrt{2}$

14. $\pm 2, \pm i$

15. $0, \frac{3 \pm 3\sqrt{5}}{2}$

16. $-6, \pm i$

17. 4 complex roots; number of real roots: 0, 2, or 4
possible rational roots: $\pm\frac{1}{2}, \pm 1, \pm 2, \pm\frac{13}{2}, \pm 13, \pm 26$

18. 5 complex roots; number of real roots: 1, 3, or 5
possible rational roots: $\pm 1, \pm 2, \pm 3, \pm 6, \pm 9, \pm 18$

19. 3 complex roots; number of real roots: 1 or 3
possible rational roots: $\pm\frac{1}{3}, \pm\frac{2}{3}, \pm 1, \pm\frac{4}{3}, \pm 2, \pm 3, \pm 4, \pm 6, \pm 12$