

pg. 318 # 2-34 even

$$\begin{array}{r}
 \boxed{3x-5} \\
 2. \quad x+4 \overline{) 3x^2+7x-20} \\
 \underline{-3x^2+12x} \phantom{-20} \\
 -5x-20 \\
 \underline{+5x+20} \\
 0
 \end{array}$$

check.

	x	+4
3x	$3x^2$	$+12x$
-5	$-5x$	$-20$

$$3x^2 + 7x - 20 \quad \checkmark$$

$$\begin{array}{r}
 x^2+2x-3 \\
 10. \quad x+2 \overline{) x^3+4x^2+x-6} \\
 \underline{-x^3+2x^2} \phantom{-6} \\
 2x^2+x \phantom{-6} \\
 \underline{-2x^2+4x} \phantom{-6} \\
 -3x-6 \\
 \underline{+3x+6} \\
 0
 \end{array}$$

yes x+2 is a factor

$$\begin{array}{r}
 14. \quad \underline{2} \mid \quad 1 \quad -4 \quad 6 \quad -4 \\
 \phantom{14. \quad \underline{2} \mid} \quad \quad 2 \quad -4 \quad 4 \\
 \phantom{14. \quad \underline{2} \mid} \quad \quad \underline{1 \quad -2 \quad 2 \quad 0}
 \end{array}$$

$$\boxed{x^2 - 2x + 2}$$

$$\begin{array}{r}
 24. \quad \underline{-3} \mid \quad 1 \quad -4 \quad -9 \quad 36 \\
 \phantom{24. \quad \underline{-3} \mid} \quad \quad -3 \quad 21 \quad -36 \\
 \phantom{24. \quad \underline{-3} \mid} \quad \quad \underline{1 \quad -7 \quad 12 \quad 0}
 \end{array}$$

given factor

$$\begin{array}{r|rrrr}
 26. & -2 & 1 & 4 & -8 & -6 & P(-2) = 6 \\
 & & & -2 & -4 & 12 & \\
 \hline
 & & 1 & 2 & -12 & 6 & \\
 & & & & & & x^2 + 2x - 12 \text{ r. } 6
 \end{array}$$

34.  $P(a) = 0$  If synthetic division yields zero, then  $x-a$  is a factor

If  $x-a$  is a factor, then  $a$  is an  $x$ -intercept and the function value at  $a$  is  $y=0$ .

5.  $3x^2 - 7x + 2$
7.  $x - 10$ , R 40
9. no
11. yes
13.  $x^2 + 4x + 3$
15.  $x^2 - 11x + 37$ , R -128
17.  $x^2 - x - 6$
19.  $x + 1$ , R 4
21.  $x^2 - 3x + 9$
23.  $y = (x + 1)(x + 3)(x - 2)$
24.  $y = (x + 3)(x - 4)(x - 3)$
25.  $\ell = x + 3$  and  $h = x$
26. 18                      27. 0                      28. 0                      29. 12
30. 168                      31. 10                      32. 51                      33. 0
34.  $P(a) = 0$ ;  $x - a$  is a factor of  $P(x)$ .
35.  $x - 1$  is not a factor of  $x^3 - x^2 - 2x$  because it does not divide into  $x^3 - x^2 - 2x$  evenly.
36. Answers may vary. Sample:  $(x^2 + x - 4) \div (x - 2)$
37.  $x^2 + 4x + 5$                       38.  $x^3 - 3x^2 + 12x - 35$ , R 109
39.  $x^4 - x^3 + x^2 - x + 1$                       40.  $x + 4$
41.  $x^3 - x^2 + 1$                       42. no
43. yes                      44. yes                      45. no                      46. no
4.  $2x^2 + 3x + 2$
6.  $9x - 12$ , R -32
8.  $x^2 + 4x + 3$
10. yes
12. no
14.  $x^2 - 2x + 2$
16.  $x^2 + 2x + 5$
18.  $-2x^2 + 9x - 19$ , R 40
20.  $3x^2 + 8x - 3$
22.  $6x - 2$ , R -4