

5.7

$$1) \frac{20x^4+x^3+2x^2}{4x^3} = \frac{20x^4}{4x^3} + \frac{x^3}{4x^3} + \frac{2x^2}{4x^3} = 5x + \frac{1}{4} + \frac{1}{2x}$$

$$3) \frac{20n^4+n^3+40n^2}{10n} = \frac{20n^4}{10n} + \frac{n^3}{10n} + \frac{40n^2}{10n} = 2n^3 + \frac{n^2}{10} + 4n$$

$$5) \frac{12x^4+24x^3+3x^2}{6x} = \frac{12x^4}{6x} + \frac{24x^3}{6x} + \frac{3x^2}{6x} = 2x^3 + 4x^2 + \frac{x}{2}$$

$$7) \frac{10n^4+50n^3+2n^2}{10n^2} = \frac{10n^4}{10n^2} + \frac{50n^3}{10n^2} + \frac{2n^2}{10n^2} = n^2 + 5n + \frac{1}{5}$$

$$9) \frac{x^2-2x-71}{x+8} \quad \begin{array}{r} x - 10 + \frac{9}{x+8} \\ x + 8 \overline{) x^2 - 2x - 71} \\ \underline{-x^2 + (-8x)} \\ -10x - 71 \\ \underline{+10x + 80} \\ 9 \end{array}$$

$$11) \frac{n^2+13n+32}{n+5} \quad \begin{array}{r} n + 8 - \frac{8}{n+5} \\ n + 5 \overline{) n^2 + 13n + 32} \\ \underline{-n^2 - 5n} \\ 8n + 32 \\ \underline{-8n - 40} \\ -8 \end{array}$$

$$13) \frac{v^2-2v-89}{v-10} \quad \begin{array}{r} v + 8 - \frac{9}{v-10} \\ v - 10 \overline{) v^2 - 2v - 89} \\ \underline{-v^2 + 10v} \\ 8v - 89 \\ \underline{-8v + 80} \\ 9 \end{array}$$

$$15) \frac{a^2-4a-38}{a-8} \quad \begin{array}{r} a + 4 - \frac{6}{a-8} \\ a - 8 \overline{) a^2 - 4a - 38} \\ \underline{-a^2 + 8a} \\ 4a - 38 \\ \underline{-4a + 32} \\ -6 \end{array}$$

$$17) \frac{45p^2+56p+19}{9p+4} \quad 5p + 4 + \frac{3}{9p+4}$$

$$9p + 4 \overline{)45p^2 + 56p + 19}$$

$$\underline{-45p^2 - 20p}$$

$$36p + 19$$

$$\underline{-36p - 16}$$

$$3$$

$$19) \frac{10x^2-32x+9}{10x-2} \quad x - 3 + \frac{3}{10x-2}$$

$$10x - 2 \overline{)10x^2 - 32x + 9}$$

$$\underline{-10x^2 + 2x}$$

$$-30x + 9$$

$$\underline{+30x - 6}$$

$$3$$

$$21) \frac{4r^2-r-1}{4r+3} \quad r - 1 + \frac{2}{4r+3}$$

$$4r + 3 \overline{)4r^2 - r - 1}$$

$$\underline{-4r^2 - 3r}$$

$$-4r - 1$$

$$\underline{+4r + 3}$$

$$2$$

$$23) \frac{n^2-4}{n-2} \quad n + 2$$

$$n - 2 \overline{)n^2 - 0n - 4}$$

$$\underline{-n^2 - 2n}$$

$$-2n - 4$$

$$\underline{+2n + 4}$$

$$0$$

$$25) \frac{27b^2+87b+35}{3b+8} \quad 9b + 5 - \frac{5}{3b+8}$$

$$3b + 8 \overline{)27b^2 + 87b + 35}$$

$$\underline{-27b^2 - 72b}$$

$$15b + 35$$

$$\underline{-15b - 40}$$

$$-5$$

$$27) \frac{4x^2 - 33x + 28}{4x - 5} \quad x - 7 - \frac{7}{4x - 5}$$

$$4x - 5 \overline{) 4x^2 - 33x + 28}$$

$$\underline{-4x^2 + 5x}$$

$$28x + 28$$

$$\underline{-28x - 35}$$

$$-7$$

$$29) \frac{a^3 + 15a^2 + 49a - 55}{a + 7} \quad a^2 + 8a - 7 - \frac{6}{a + 7}$$

$$a + 7 \overline{) a^3 + 15a^2 + 49a - 55}$$

$$\underline{-a^3 - 7a^2}$$

$$8a^2 + 49a$$

$$\underline{-8a^2 - 56a}$$

$$-7a - 55$$

$$\underline{+7a + 55}$$

$$0$$

$$31) \frac{x^3 - 26x - 41}{x + 4} \quad x^2 - 4x - 10 - \frac{1}{x + 4}$$

$$x + 4 \overline{) x^3 - 0x^2 - 26x - 41}$$

$$\underline{-x^3 - 4x^2}$$

$$-4x^2 - 26x$$

$$\underline{+4x^2 + 16x}$$

$$-10x - 41$$

$$\underline{+10x + 40}$$

$$1$$

$$33) \frac{3n^3 + 9n^2 - 64n - 68}{n + 6} \quad 3n^2 - 9n - 10 - \frac{8}{n + 6}$$

$$n + 6 \overline{) 3n^3 + 9n^2 - 64n - 68}$$

$$\underline{-3n^3 - 18n^2}$$

$$-9n^2 - 64n$$

$$\underline{+9n^2 + 54n}$$

$$-10n - 68$$

$$\underline{+10n + 60}$$

$$-8$$

$$35) \frac{x^3 - 46x + 22}{x + 7} \quad x^2 - 7x + 3 + \frac{1}{x+7}$$

$$x + 7 \overline{) x^3 + 0x^2 - 46x + 22}$$

$$\underline{-x^3 - 7x}$$

$$\quad -7x - 46x$$

$$\quad \underline{+7x + 49x}$$

$$\quad \quad 3x + 22$$

$$\quad \quad \underline{-3x - 21}$$

$$\quad \quad \quad 1$$

$$37) \frac{9p^3 + 45p^2 + 27p - 5}{9p + 9} \quad p^2 + 4p - 1 + \frac{4}{9p+9}$$

$$9p + 9 \overline{) 9p^3 + 45p^2 + 27p - 5}$$

$$\underline{-9p^3 - 9p}$$

$$\quad 36p^2 + 27p$$

$$\quad \underline{-36p^2 - 36p}$$

$$\quad \quad -9p - 5$$

$$\quad \quad \underline{+9p + 9}$$

$$\quad \quad \quad 4$$

$$39) \frac{r^3 - r^2 - 16r + 8}{r - 4} \quad r^2 + 3r - 4 - \frac{8}{r-4}$$

$$r - 4 \overline{) r^3 - r^2 - 16r + 8}$$

$$\underline{-r^3 + 4r^2}$$

$$\quad 3r^2 - 16r$$

$$\quad \underline{-3r^2 + 12r}$$

$$\quad \quad -4r + 8$$

$$\quad \quad \underline{+4r - 16}$$

$$\quad \quad \quad -8$$

$$41) \frac{12n^3 + 12n^2 - 15n - 4}{2n + 3} \quad 6n^2 - 3n - 3 + \frac{5}{2n+3}$$

$$2n + 3 \overline{) 12n^3 + 12n^2 - 15n - 4}$$

$$\underline{-12n^3 - 18n^2}$$

$$\quad -6n^2 - 15n$$

$$\quad \underline{+6n^2 + 9n}$$

$$\quad \quad -6n - 4$$

$$\quad \quad \underline{+6n + 9}$$

$$\quad \quad \quad 5$$

$$\begin{array}{r}
 43) \frac{4v^3 - 21v^2 + 6v + 19}{4v + 3} \qquad v^2 - 6v + 6 + \frac{1}{4v+3} \\
 \underline{4v^3 + 12v^2} \\
 -4v^3 - 3v^2 \\
 \underline{-24v^2 + 6v} \\
 +24v^2 + 18v \\
 \underline{24v + 19} \\
 -24v - 18 \\
 \underline{ - 18} \\
 1
 \end{array}$$