

Self - Exercise 7

110 LEE LEE 051PP17 F2006

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Divide

$$1) (18r^5 + 36r^4 + 27r^3) \div 9r = 2r^4 + 4r^3 + 3r^2$$

$$\begin{array}{r} 2r^4 + 4r^3 + 3r^2 \\ 9r \overline{) 18r^5 + 36r^4 + 27r^3} \\ \underline{-) 18r^5} \\ 36r^4 \\ \underline{-) 36r^4} \\ 27r^3 \\ \underline{-) 27r^3} \\ 0 \end{array}$$

$$\begin{aligned} r \cdot r &= r^2 \\ r \cdot r &= r^2 \\ r^2 \cdot r &= r^3 \\ r^3 \cdot r &= r^4 \\ r^4 \cdot r &= r^5 \end{aligned}$$

$$2) (20n^3 + 20n^2 + n) \div 10n^2 = 2n + 2 \dots n$$

$$\begin{array}{r} 2n + 2 \\ 10n^2 \overline{) 20n^3 + 20n^2 + n} \\ \underline{-) 20n^3} \\ 20n^2 \\ \underline{-) 20n^2} \\ n \text{ (balance)} \end{array}$$

$$\frac{20n^3 + 20n^2 + n}{10n^2} = 2n + 2 \dots n$$

$$3) (p^2 + p - 79) \div (p + 9) = p - 8 \dots -7$$

$$\begin{array}{r} p - 8 \\ p + 9 \overline{) p^2 + p - 79} \\ \underline{-(p^2 + 9p)} \\ -8p - 79 \\ \underline{-(8p + 72)} \\ -7 \text{ (balance)} \end{array}$$

$$\begin{aligned} p \cdot p &= p^2 & p \cdot (-79) &= -79 \\ p \cdot p &= p^2 & p \cdot (-72) &= -72 \\ p^2 \cdot p &= p^3 & p \cdot (-7) &= -7 \\ p^3 \cdot p &= p^4 \end{aligned}$$

$$\frac{p^2 + p - 79}{p + 9} = p - 8 \dots -7$$

$$4) (x^3 + 10x^2 + 13x + 36) \div (x + 9) = x^2 + x + 4$$

$$\begin{array}{r} x^2 + x + 4 \\ x + 9 \overline{) x^3 + 10x^2 + 13x + 36} \\ \underline{-(x^3 + 9x^2)} \\ x^2 + 13x \\ \underline{-(x^2 + 9x)} \\ 4x + 36 \\ \underline{-(4x + 36)} \\ 0 \end{array}$$

$$\begin{aligned} x \cdot x &= x^2 & x \cdot 9 &= 9x \\ x^2 \cdot x &= x^3 & x^2 \cdot 9 &= 9x^2 \\ x^3 \cdot x &= x^4 \end{aligned}$$

$$10x^2 - (9x^2)$$

$$= 10x^2 - 9x^2$$

$$= x^2$$

$$13x - (9x)$$

$$= 13x - 9x$$

$$= 4x$$

$$5) (10a^2 + 53a - 37) \div (10a - 7) = a + 6 \dots 5$$

$$\begin{array}{r}
 \begin{array}{r}
 \checkmark a + 6 \\
 10a - 7 \overline{) 10a^2 + 53a - 37} \\
 \underline{\rightarrow 10a^2 - 7a} \quad \downarrow \\
 \checkmark 60a - 37 \\
 \underline{\rightarrow 60a - 42} \\
 5 \text{ (balance)}
 \end{array}
 \qquad
 \begin{array}{l}
 a \cdot a = a^2 \\
 a^2 \cdot a = a^3 \\
 a^3 \cdot a = a^4 \\
 -37 - (-42) \\
 = -37 + 42 \\
 = 5
 \end{array}
 \end{array}$$

$$\frac{10a^2 + 53a - 37}{10a - 7} = a + 6 \dots 5$$

$$6) (x^2 + 3x - 44) \div (x - 6) = x + 9 \dots -8$$

$$\begin{array}{r}
 \begin{array}{r}
 x + 9 \checkmark \\
 x - 6 \overline{) x^2 + 3x - 44} \\
 \underline{\rightarrow x^2 - 6x} \quad \downarrow \\
 9x - 44 \\
 \underline{\rightarrow 9x - 36} \quad \text{54} \\
 -8 \text{ (balance)}
 \end{array}
 \qquad
 \begin{array}{l}
 x \cdot x = x^2 \\
 x^2 \cdot x = x^3 \\
 x^3 \cdot x = x^4 \\
 -44 - (-36) \\
 = -44 + 36 \\
 = -8
 \end{array}
 \end{array}$$

$$\frac{x^2 + 3x - 44}{x - 6} = x + 9 \dots -8$$

$$7) (b^3 + 13b^2 + 42b + 54) \div (b+9) = b^2 + 4b + 6$$

$$\begin{array}{r}
 b^2 + 4b + 6 \\
 b+9 \overline{) b^3 + 13b^2 + 42b + 54} \\
 \underline{- (b^3 + 9b^2)} \\
 4b^2 + 42b \\
 \underline{- (4b^2 + 36b)} \\
 6b + 54 \\
 \underline{- (6b + 54)} \\
 0
 \end{array}$$

$b \div b = b^2$
 $13 - 9 = 4$
 $b^2 \cdot b = b^3$
 $b^2 \cdot b = b^3$
 $42 - 36 = 6$
 $6b + 54$
 $6b + 54$
 0

$$8) (90c^3 + 145c^2 + 77c + 29) \div (9c + 10) = 10c^2 + 5c + 3 \dots -1$$

$$\begin{array}{r}
 10c^2 + 5c + 3 \\
 9c+10 \overline{) 90c^3 + 145c^2 + 77c + 29} \\
 \underline{- (90c^3 + 100c^2)} \\
 45c^2 + 77c \\
 \underline{- (45c^2 + 50c)} \\
 27c + 29 \\
 \underline{- (27c + 30)} \\
 -1 \text{ (balance)}
 \end{array}$$

$c \div c = c^2$
 $145 - 100 = 45$
 $c^2 \cdot c = c^3$
 $c^2 \cdot c = c^3$
 $c^2 \cdot c = c^3$
 $77 - 50 = 27$
 $29 - 30 = -1$
 -1 (balance)

$$\frac{90c^3 + 145c^2 + 77c + 29}{9c + 10} = 10c^2 + 5c + 3 \dots -1$$

$$9) (3k^2 - 18k - 46) \div (3k + 6) = k - 8 \dots 2$$

$$\begin{array}{r} k - 8 \\ 3k + 6 \overline{) 3k^2 - 18k - 46} \\ \underline{-) 3k^2 + 6k} \\ -24k - 46 \\ \underline{-) -24k - 48} \end{array}$$

2 (balance)

$$\begin{array}{ll} k & -46 - (-48) \\ k \cdot k = k^2 & -18 + (+3) = -15 \\ k^2 \cdot k = k^3 & = -18 - 3 \\ k^3 \cdot k = k^4 & = -21 \end{array}$$

$$\begin{array}{l} -46 - (-48) \\ = -46 + 48 \\ = 2 \end{array}$$

$$\frac{3k^2 - 18k - 46}{3k + 6} = (k - 8) \dots 2$$

$$10) (x^2 + 3x - 44) \div (x - 6) = (x + 9) \dots 10$$

$$\begin{array}{r} x + 9 \\ x - 6 \overline{) x^2 + 3x - 44} \\ \underline{-) x^2 - 6x} \\ 9x - 44 \\ \underline{-) 9x - 54} \end{array}$$

10 (balance)

$$\begin{array}{ll} x & -44 - (-54) \\ x \cdot x = x^2 & 3 - (-6) = 9 \\ x^2 \cdot x = x^3 & = 3 + 6 \\ x^3 \cdot x = x^4 & = 9 \end{array}$$

$$\begin{array}{l} -44 - (-54) \\ = -44 + 54 \\ = 10 \end{array}$$

$$\frac{x^2 + 3x - 44}{x - 6} = x + 9 \dots 10$$