

Exercice 18

1. ① $x^5 = 16x$

$$x^5 - 16x = 0$$

$$x(x^4 - 16) = 0$$

$$x = 0$$

ou

$$x^4 - 16 = 0$$

$$x^4 = 16$$

$$x^4 = 2^4$$

$$x = 2$$

$$x = -2$$

2. ② $x^3 - 2x^2 - 25x + 50 = 0$

$$x^2(\underline{x-2}) - 25(\underline{x-2}) = 0$$

$$(x-2)(x^2 - 25) = 0$$

$$x - 2 = 0$$

$$x = 2$$

ou

$$x^2 - 25 = 0$$

$$x^2 = 25$$

$$x^2 = 5^2$$

$$x = 5$$

$$x = -5$$

$$2. \textcircled{8} \quad 2x^4 + 5x = 2x^3 + 5$$

$$\underline{2x^4 - 2x^3 + 5x - 5 = 0}$$

$$2x^3(x-1) + 5(x-1) = 0$$

$$(x-1)(2x^3 + 5) = 0$$

$$x-1=0$$

$$\vee \quad 2x^3 + 5 = 0$$

$$\textcircled{x=1}$$

$$x^3 = -\frac{5}{2}$$

$$x = -\sqrt[3]{\frac{5}{2}}$$

7. (B) $x^4 - x^3 - 4x^2 - 2x - 12 = 0$

$$\frac{-12}{\pm 1 \pm 2 \pm 3 \pm 4 \pm 6 \pm 12}$$

1 -1 -4 -2 -12 (2)

↓ 2 2 -4 -12

1 1 -2 -6 -24

1 -1 -4 -2 -12 (-2)

↓ -2 6 -4 12

1 -3 2 -6 0 ✓

$$(x+2)(x^3 - 3x^2 + 2x - 6) = 0$$

$$x+2=0$$

$$x = -2$$

$$x^3 - 3x^2 + 2x - 6 = 0$$

$$x^2(x-3) + 2(x-3) = 0$$

$$(x-3)(x^2+2) = 0$$

$$x-3=0$$

$$x=3$$

$$x^2+2=0$$

$$x^2 = -2$$

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2. (22) $x^3 - 8 = x^2 - 5x + 6$

$$x^3 - 8 - x^2 + 5x - 6 = 0$$

$$x^3 - x^2 + 5x - 14 = 0,$$

$$\frac{-14}{\pm 1 \pm 2 \pm 14 \pm 7}$$

~~$$\begin{array}{r|rrrr} 1 & -1 & 5 & -14 & \textcircled{1} \\ \downarrow & 1 & 0 & 5 & \\ 1 & 0 & 5 & -9 & \end{array}$$~~

~~$$\begin{array}{r|rrrr} 1 & -1 & 5 & -14 & \textcircled{-1} \\ \downarrow & -1 & 2 & -7 & \\ 1 & -2 & 7 & -21 & \end{array}$$~~

$$\begin{array}{r|rrrr} 1 & -1 & 5 & -14 & \textcircled{2} \\ \downarrow & 2 & 2 & 14 & \\ \underline{1} & 1 & 7 & 0 & \end{array}$$

$$(x-2)(x^2+x+7)=0$$

$$x-2=0 \quad \vee \quad x^2+x+7=0$$

$$\Delta < 0$$

$$\textcircled{x=2}$$

9. (8) $x^6 - 2x^4 - 5x^2 + 6 = 0$

$$(x^2)^3 - 2(x^2)^2 - 5x^2 + 6 = 0$$

Let $x^2 = t$

$$t^3 - 2t^2 - 5t + 6 = 0$$

1	-2	-5	6	(1)
↓	1	-1	-6	
1	-1	-6	0	

$$(t-1)(t^2 - t - 6) = 0$$

$$t-1=0 \quad \vee \quad t^2 - t - 6 = 0$$

$$t=1$$

$$x^2 = 1$$

$$x = \pm 1$$

$$t=3$$

$$x^2 = 3$$

$$x = \pm \sqrt{3}$$

$$t=-2$$

$$x^2 = -2$$

Answer?

$$3. \quad (B) \quad 3x^5 - 2x^4 - 3x + 2$$

$$x^4(3x-2) - (3x-2) = 0$$

$$(3x-2)(x^4-1) = 0$$

$$3x-2=0$$

$$x^4-1=0$$

$$x = \frac{2}{3}$$

$$x^4 = 1$$

$$x^4 = 1^4$$

$$x = 1 \quad x = -1$$

$$4. \quad (B) \quad x^3 - 6x + 5 = 0$$

$$\frac{5}{\pm 1 \pm 5}$$

$$\begin{array}{ccccccc} 1 & 0 & -6 & 5 & (1) & & \\ \downarrow & 1 & 1 & -5 & & & \\ 1 & 1 & -5 & 0 & & \checkmark & \end{array}$$

$$(x-1)(x^2+x-5) = 0$$

$$x-1=0$$

$$x^2+x-5=0$$

$$(x=1)$$

$$\Delta = 1+20=21$$

$$x = \frac{-1 \pm \sqrt{21}}{2}$$

Enoplos Madure

17

(2)

(5)

(19)

(20)

(21)

(23)

(24)

(26)

(29)

(30) a y.

(33)

(34)

(35)

(36)

(40)

(42)

(43).