

班級: _____ 座號: _____ 姓名: _____

(1) 請判斷下列何者為的 x 一元二次方程式?

- (A) $x^2 + 2x - 3$
- ✓(B) $3x^2 - 0.4x + 1 = 0$
- ✓(C) $5x - x^2 = 6$
- ✓(D) $2 + 3x - x^2 = 0$
- (E) $4x^2 - 1$
- ✓(F) $x = x^2$
- ✓(G) $(x-1)(x+1) = 4$
- (H) $x^2 - 4x + 4 = (x+2)(x-2)$
- ✓(I) $x(x-4) - x(2x-3) = 0$

答: B.C.D.F.G.I

(2) $x = -2$ 是下列哪個二元一次方程式的解?

- (A) $x(x-2) = 0$ $(-2)(-2-2) = 8 \neq 0$
- ✓(B) $x^2 + x - 2 = 0$ $(-2)^2 + (-2) - 2 = 0$
- ✓(C) $(x+2)(x-1) = 0$ $(-2+2)(-2-1) = 0$
- (D) $2x^2 + x = 2$ $2(-2)^2 + (-2) = 6 \neq 2$
- (E) $3x^2 - 4x - 4 = 0$
 $3(-2)^2 - 4(-2) - 4$
 $= 12 + 8 - 4$
 $= 16 \neq 0$

答: B.C

解下列各方程式

(3) $x(x+4) = 0$

$x = 0$
 $x+4 = 0 \Rightarrow x = -4$

A: $x = 0$ or -4

(4) $(x-3)(x+1) = 0$

$x-3 = 0 \Rightarrow x = 3$
 $x+1 = 0 \Rightarrow x = -1$

A: $x = 3$ or -1

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

$2x+1 = 0 \Rightarrow x = -\frac{1}{2}$
 $3x-2 = 0 \Rightarrow x = \frac{2}{3}$

A: $x = -\frac{1}{2}$ or $\frac{2}{3}$

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

$x(x+5) = 0$
 $x = 0$

$x+5 = 0 \Rightarrow x = -5$

A: $x = 0$ or -5

(7) $2x^2 - 3x = 0$

$x(2x-3) = 0$

$x = 0$
 $2x-3 = 0 \Rightarrow x = \frac{3}{2}$

A: $x = 0$ or $\frac{3}{2}$

(8) $x^2 + \frac{1}{2}x = 0$

$x(2x+1) = 0$

$x(2x+1) = 0$

$x = 0$
 $2x+1 = 0 \Rightarrow x = -\frac{1}{2}$

A: $x = 0$ or $-\frac{1}{2}$

(9) $16x^2 = 1$

$16x^2 - 1 = 0$

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

$(4x+1)(4x-1) = 0$

$4x+1 = 0 \Rightarrow x = -\frac{1}{4}$

$4x-1 = 0 \Rightarrow x = \frac{1}{4}$

A: $x = \pm \frac{1}{4}$

(10) $3x^2 - 27 = 0$

$x^2 - 9 = 0$

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

$x+3 = 0 \Rightarrow x = -3$

$x-3 = 0 \Rightarrow x = 3$

A: $x = \pm 3$

(11) $\frac{2}{3}x^2 = 0$

$x^2 = 0$

$x \cdot x = 0$

$x = 0, x = 0$

A: $x = 0$ or 0

(12) $4x^2 - 81 = 0$

$(2x)^2 - 9^2 = 0$

$(2x+9)(2x-9) = 0$

$2x+9 = 0 \Rightarrow x = -\frac{9}{2}$

$2x-9 = 0 \Rightarrow x = \frac{9}{2}$

A: $x = \pm \frac{9}{2}$

(13) $x^2 + 6x + 8 = 0$

$(x+2)(x+4) = 0$

$x+2 = 0 \Rightarrow x = -2$

$x+4 = 0 \Rightarrow x = -4$

$\frac{1 \times 2}{1 \times 4}$
 $2+4=6$

A: $x = -2$ or -4

(14) $x^2 + 5x - 36 = 0$

$(x-4)(x+9) = 0$

$x-4 = 0 \Rightarrow x = 4$

$x+9 = 0 \Rightarrow x = -9$

$\frac{1 \times -4}{1 \times 9}$
 $-4+9=5$

A: $x = 4$ or -9

(15) $x^2 - x - 12 = 0$

$(x+3)(x-4) = 0$

$x+3 = 0 \Rightarrow x = -3$

$x-4 = 0 \Rightarrow x = 4$

$\frac{1 \times 3}{1 \times -4}$
 $3+(-4)=-1$

A: $x = -3$ or 4

(16) $x^2 + 5x - 24 = 0$

$(x-3)(x+8) = 0$

$x-3 = 0 \Rightarrow x = 3$

$x+8 = 0 \Rightarrow x = -8$

$\frac{1 \times -3}{1 \times 8}$
 $-3+8=5$

A: $x = 3$ or -8

(17) $2x^2 - 7x + 6 = 0$

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

$x-2 = 0 \Rightarrow x = 2$

$2x-3 = 0 \Rightarrow x = \frac{3}{2}$

$\frac{1 \times -2}{2 \times -3}$
 $(-4)+(-3)=-7$

A: $x = 2$ or $\frac{3}{2}$

(18) $5x^2 - 2x - 3 = 0$

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

$x-1 = 0 \Rightarrow x = 1$

$5x+3 = 0 \Rightarrow x = -\frac{3}{5}$

$\frac{1 \times -1}{5 \times 3}$
 $-5+3=-2$

A: $x = 1$ or $-\frac{3}{5}$

(19) $9x^2 + 21x - 8 = 0$

$(3x-1)(3x+8) = 0$

$3x-1 = 0 \Rightarrow x = \frac{1}{3}$

$3x+8 = 0 \Rightarrow x = -\frac{8}{3}$

$\frac{3 \times -1}{3 \times 8}$
 $-3+24=21$

A: $x = \frac{1}{3}$ or $-\frac{8}{3}$

(20) $3x^2 + 16x - 12 = 0$

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

$x+6 = 0 \Rightarrow x = -6$

$3x-2 = 0 \Rightarrow x = \frac{2}{3}$

$\frac{1 \times 6}{3 \times -2}$
 $18+(-2)=16$

A: $x = -6$ or $\frac{2}{3}$

(21) $16x^2 + 1 = 8x$

$16x^2 - 8x + 1 = 0$

$(4x-1)(4x-1) = 0$

$4x-1 = 0 \Rightarrow x = \frac{1}{4}$

$\frac{4 \times -1}{4 \times -1}$
 $(-4)+(-4)=-8$

A: $x = \frac{1}{4}$ or $\frac{1}{4}$

(22) $0.3x^2 + 1.3x + 0.4 = 0$

同 $\times 10$ $3x^2 + 13x + 4 = 0$

$(x+4)(3x+1) = 0$

$x+4 = 0 \Rightarrow x = -4$

$3x+1 = 0 \Rightarrow x = -\frac{1}{3}$

$\frac{1 \times 4}{3 \times 1}$
 $12+1=13$

A: $x = -4$ or $-\frac{1}{3}$

(23) $6x^2 + 108x + 486 = 0$

同 $\div 6$ $x^2 + 18x + 81 = 0$

$(x+9)(x+9) = 0$

$x+9 = 0 \Rightarrow x = -9$

$\frac{1 \times 9}{1 \times 9}$
 $9+9=18$

A: $x = -9$ or -9

$$(24) \frac{1}{4}x^2 + \frac{1}{3}x - \frac{1}{3} = 0$$

$$\times 12 \quad 3x^2 + 4x - 4 = 0$$

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

$$x+2=0 \Rightarrow x=-2$$

$$3x-2=0 \Rightarrow x=\frac{2}{3}$$

$$A: x = -2 \text{ or } \frac{2}{3}$$

$$(25) 2x^2 - 3x = -2x^2 + 1$$

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

$$(x-1)(4x+1) = 0$$

$$x-1=0 \Rightarrow x=1$$

$$4x+1=0 \Rightarrow x=-\frac{1}{4}$$

$$A: x = 1 \text{ or } -\frac{1}{4}$$

$$(26) 9x^2 + 3x - 5 = 3x^2 + 4x + 10$$

$$6x^2 - x - 15 = 0$$

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

$$2x+3=0 \Rightarrow x=-\frac{3}{2}$$

$$3x-5=0 \Rightarrow x=\frac{5}{3}$$

$$A: x = -\frac{3}{2} \text{ or } \frac{5}{3}$$

$$(27) (x-7)^2 = 16$$

$$(x-7)^2 - 4^2 = 0$$

$$(x-7+4)(x-7-4) = 0$$

$$(x-3)(x-11) = 0$$

$$x-3=0 \Rightarrow x=3$$

$$x-11=0 \Rightarrow x=11$$

$$A: x = 3 \text{ or } 11$$

$$(28) (2x+3)(x+1) = 1$$

$$2x^2 + 2x + 3x + 3 = 1$$

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

$$(x+2)(2x+1) = 0$$

$$x+2=0 \Rightarrow x=-2$$

$$2x+1=0 \Rightarrow x=-\frac{1}{2}$$

$$A: x = -2 \text{ or } -\frac{1}{2}$$

$$(29) (x+1)^2 = 2(x^2 - 1)$$

$$x^2 + 2x + 1 = 2x^2 - 2$$

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

$$(x+1)(x-3) = 0$$

$$x+1=0 \Rightarrow x=-1$$

$$x-3=0 \Rightarrow x=3$$

$$A: x = -1 \text{ or } 3$$

$$(30) (3x-2)^2 = (x-1)^2$$

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

$$[(3x-2)+(x-1)][(3x-2)-(x-1)] = 0$$

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

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

$$4x-3=0 \Rightarrow x=\frac{3}{4}$$

$$2x-1=0 \Rightarrow x=\frac{1}{2}$$

$$A: x = \frac{3}{4} \text{ or } \frac{1}{2}$$

$$(31) (x+3)(2x+4) - (x+3)(x-5) = 0$$

$$(x+3)[(2x+4)-(x-5)] = 0$$

$$(x+3)(2x+4-x+5) = 0$$

$$(x+3)(x+9) = 0$$

$$x+3=0 \Rightarrow x=-3$$

$$x+9=0 \Rightarrow x=-9$$

$$A: x = -3 \text{ or } -9$$

$$(32) (2x+3)(x-6) = 6(6-x)^2$$

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

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

$$(x-6)[(2x+3) - 6(x-6)] = 0$$

$$(x-6)(2x+3-6x+36) = 0$$

$$(x-6)(-4x+39) = 0$$

$$x-6=0 \Rightarrow x=6$$

$$-4x+39=0 \Rightarrow x=\frac{39}{4}$$

$$A: x = 6 \text{ or } \frac{39}{4}$$

$$(33) (x-2)^2 + x^2 + (x+2)^2 = 155$$

$$x^2 - 4x + 4 + x^2 + x^2 + 4x + 4 - 155 = 0$$

$$3x^2 - 147 = 0$$

$$\div 3 \quad x^2 - 49 = 0$$

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

$$x+7=0 \Rightarrow x=-7$$

$$x-7=0 \Rightarrow x=7$$

$$A: x = \pm 7$$

$$(34) \frac{1}{12}(x-3)^2 = \frac{1}{3}x$$

$$\times 12 \quad (x-3)^2 = 4x$$

$$x^2 - 6x + 9 - 4x = 0$$

$$x^2 - 10x + 9 = 0$$

$$(x-1)(x-9) = 0$$

$$x-1=0 \Rightarrow x=1$$

$$x-9=0 \Rightarrow x=9$$

$$A: x = 1 \text{ or } 9$$

$$(35) \frac{x^2 - 24}{5} + \frac{x^2 - 37}{4} = 8$$

$$\times 20 \quad 4(x^2 - 24) + 5(x^2 - 37) = 160$$

$$4x^2 - 96 + 5x^2 - 185 - 160 = 0$$

$$9x^2 - 441 = 0$$

$$\div 9 \quad x^2 - 49 = 0$$

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

$$x+7=0 \Rightarrow x=-7$$

$$x-7=0 \Rightarrow x=7$$

$$A: x = \pm 7$$

$$(36) \frac{(x+2)(x-3)}{4} = \frac{x(x+2)}{5}$$

$$\times 20 \quad 5(x+2)(x-3) = 4x(x+2)$$

$$5(x^2 - x - 6) = 4(x^2 + 2x)$$

$$5x^2 - 5x - 30 = 4x^2 + 8x$$

$$x^2 - 13x - 30 = 0$$

$$(x+2)(x-15) = 0$$

$$x+2=0 \Rightarrow x=-2$$

$$x-15=0 \Rightarrow x=15$$

$$A: x = -2 \text{ or } 15$$

$$(37) (x-2)^2 + 5(x-2) + 4 = 0$$

$$\text{令 } x-2 = A$$

$$A^2 + 5A + 4 = 0$$

$$(A+1)(A+4) = 0$$

$$(x-2+1)(x-2+4) = 0$$

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

$$x = 1 \text{ or } -2$$

$$(38) (3x+1)^2 - 4(3x+1) + 4 = 0$$

$$\text{令 } 3x+1 = A$$

$$A^2 - 4A + 4 = 0$$

$$(A-2)^2 = 0$$

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

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

$$3x-1=0 \Rightarrow x=\frac{1}{3}$$

$$x = \frac{1}{3} \text{ or } \frac{1}{3}$$

$$(39) 6(2x-1)^2 - (2x-1)(x+1) - 2(x+1)^2 = 0$$

$$\text{令 } 2x-1 = A, x+1 = B$$

$$6A^2 - AB - 2B^2 = 0$$

$$(2A+B)(3A-2B) = 0$$

$$[2(2x-1) + (x+1)][3(2x-1) - 2(x+1)] = 0$$

$$(4x-2+x+1)(6x-3-2x-2) = 0$$

$$(5x-1)(4x-5) = 0$$

$$5x-1=0 \Rightarrow x=\frac{1}{5}$$

$$4x-5=0 \Rightarrow x=\frac{5}{4}$$

$$x = \frac{1}{5} \text{ or } \frac{5}{4}$$