

CORRIGE – LA MERCI

EXERCICE 1B.1

$x^2 = 5$ $S = \{-\sqrt{5}; \sqrt{5}\}$	$x^2 = 16$ $S = \{-4; 4\}$	$x^2 = 0$ $S = \{0\}$	$x^2 = 1$ $S = \{-1; 1\}$
$x^2 = -2$ $S = \emptyset$	$-x^2 = -2$ $S = \{-\sqrt{2}; \sqrt{2}\}$	$-x^2 = 49$ $S = \emptyset$	$(-x)^2 = 3$ $S = \{-\sqrt{3}; \sqrt{3}\}$

EXERCICE 1B.2

$x^2 - 2 = 3$ $\Leftrightarrow x^2 - 5 = 0$ $\Leftrightarrow x^2 - (\sqrt{5})^2 = 0$ $\Leftrightarrow (x + \sqrt{5})(x - \sqrt{5}) = 0$ $\Leftrightarrow x + \sqrt{5} = 0$ ou $x - \sqrt{5} = 0$ $\Leftrightarrow x = -\sqrt{5}$ ou $x = \sqrt{5}$ $S = \{-\sqrt{5}; \sqrt{5}\}$	$x^2 + 6 = 8$ $\Leftrightarrow x^2 - 2 = 0$ $\Leftrightarrow x^2 - (\sqrt{2})^2 = 0$ $\Leftrightarrow (x + \sqrt{2})(x - \sqrt{2}) = 0$ $\Leftrightarrow x + \sqrt{2} = 0$ ou $x - \sqrt{2} = 0$ $\Leftrightarrow x = -\sqrt{2}$ ou $x = \sqrt{2}$ $S = \{-\sqrt{2}; \sqrt{2}\}$	$5 - x^2 = -2$ $\Leftrightarrow 7 - x^2 = 0$ $\Leftrightarrow (\sqrt{7})^2 - x^2 = 0$ $\Leftrightarrow (\sqrt{7} + x)(\sqrt{7} - x) = 0$ $\Leftrightarrow \sqrt{7} + x = 0$ ou $\sqrt{7} - x = 0$ $\Leftrightarrow x = -\sqrt{7}$ ou $x = \sqrt{7}$ $S = \{-\sqrt{7}; \sqrt{7}\}$	$-13 - x^2 = 11$ $\Leftrightarrow -x^2 = 24$ $\Leftrightarrow x^2 = -24$ $S = \emptyset$
$5x^2 = 15$ $\Leftrightarrow 5x^2 - 15 = 0$ $\Leftrightarrow 5(x^2 - 3) = 0$ $\Leftrightarrow x^2 - (\sqrt{3})^2 = 0$ $\Leftrightarrow (x + \sqrt{3})(x - \sqrt{3}) = 0$ $\Leftrightarrow x + \sqrt{3} = 0$ ou $x - \sqrt{3} = 0$ $\Leftrightarrow x = -\sqrt{3}$ ou $x = \sqrt{3}$ $S = \{-\sqrt{3}; \sqrt{3}\}$	$3x^2 = 12$ $\Leftrightarrow 3x^2 - 12 = 0$ $\Leftrightarrow 3(x^2 - 4) = 0$ $\Leftrightarrow x^2 - 2^2 = 0$ $\Leftrightarrow (x + 2)(x - 2) = 0$ $\Leftrightarrow x + 2 = 0$ ou $x - 2 = 0$ $\Leftrightarrow x = -2$ ou $x = 2$ $S = \{-2; 2\}$	$17 - 7x^2 = 3$ $\Leftrightarrow 14 - 7x^2 = 0$ $\Leftrightarrow 7(2 - x^2) = 0$ $\Leftrightarrow x^2 - 2 = 0$ $\Leftrightarrow (x + \sqrt{2})(x - \sqrt{2}) = 0$ $\Leftrightarrow x = -\sqrt{2}$ ou $x = \sqrt{2}$ $S = \{-\sqrt{2}; \sqrt{2}\}$	$6 + 2x^2 = 5$ $\Leftrightarrow 1 + 2x^2 = 0$ $\Leftrightarrow 2x^2 = -1$ $\Leftrightarrow x^2 = -\frac{1}{2}$ $S = \emptyset$

EXERCICE 1B.3

$(x - 3)^2 = 7$ $\Leftrightarrow (x - 3)^2 - 7 = 0$ $\Leftrightarrow (x - 3)^2 - (\sqrt{7})^2 = 0$ $\Leftrightarrow (x - 3 + \sqrt{7})(x - 3 - \sqrt{7}) = 0$ $\Leftrightarrow x = 3 - \sqrt{7}$ ou $x = 3 + \sqrt{7}$ $S = \{3 - \sqrt{7}; 3 + \sqrt{7}\}$	$(x + 7)^2 = 3$ $\Leftrightarrow (x + 7)^2 - (\sqrt{3})^2 = 0$ $\Leftrightarrow (x + 7 + \sqrt{3})(x + 7 - \sqrt{3}) = 0$ $\Leftrightarrow x = -7 - \sqrt{3}$ ou $x = -7 + \sqrt{3}$ $S = \{-7 - \sqrt{3}; -7 + \sqrt{3}\}$	$(x - 7)^2 = 3$ $\Leftrightarrow (x - 7)^2 - (\sqrt{3})^2 = 0$ $\Leftrightarrow (x - 7 + \sqrt{3})(x - 7 - \sqrt{3}) = 0$ $\Leftrightarrow x = 7 - \sqrt{3}$ ou $x = 7 + \sqrt{3}$ $S = \{7 - \sqrt{3}; 7 + \sqrt{3}\}$	$(x + 3)^2 = -7$ $S = \emptyset$
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$$(2x - 3)^2 = 1$$

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

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

$$\Leftrightarrow (2x-2)(2x-4) = 0$$

$$\Leftrightarrow 2(x-1) \times 2(x-2) = 0$$

$$\Leftrightarrow 4(x-1)(x-2) = 0$$

$$\Leftrightarrow x=1 \text{ ou } x=2$$

$$S = \{1; 2\}$$

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

$$\Leftrightarrow (2x-1)^2 - (\sqrt{3})^2 = 0$$

$$(2x-1+\sqrt{3})(2x-1-\sqrt{3}) = 0$$

$$\Leftrightarrow 2x=1-\sqrt{3} \text{ ou } 2x=1+\sqrt{3}$$

$$\Leftrightarrow x = \frac{1-\sqrt{3}}{2} \text{ ou } x = \frac{1+\sqrt{3}}{2}$$

$$S = \left\{ \frac{1-\sqrt{3}}{2}; \frac{1+\sqrt{3}}{2} \right\}$$

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

$$\Leftrightarrow (4-3x)^2 - (\sqrt{2})^2 = 0$$

$$(4-3x+\sqrt{2})(4-3x-\sqrt{2}) = 0$$

$$-3x = -4 - \sqrt{2}$$

$$\text{ou } -3x = -4 + \sqrt{2}$$

$$x = \frac{-4-\sqrt{2}}{3} \text{ ou } x = \frac{-4+\sqrt{2}}{3}$$

$$S = \left\{ \frac{-4-\sqrt{2}}{3}; \frac{-4+\sqrt{2}}{3} \right\}$$

$$\left(\frac{1}{x+3} \right)^2 = 2$$

$$\Leftrightarrow \left(\frac{1}{x+3} \right)^2 = (\sqrt{2})^2$$

$$\Leftrightarrow (x+3)^2 = \left(\frac{1}{\sqrt{2}} \right)^2$$

$$\Leftrightarrow (x+3)^2 = \left(\frac{\sqrt{2}}{2} \right)^2$$

$$(x+3)^2 - \left(\frac{\sqrt{2}}{2} \right)^2 = 0$$

$$S = \left\{ -3 - \frac{\sqrt{2}}{2}; -3 + \frac{\sqrt{2}}{2} \right\}$$