## Entraînement technique : équations

Résoudre les équations suivantes pour trouver x (il peut y avoir plusieurs solutions):

1) 
$$\frac{10}{5x+5} = \frac{10}{-x-5}$$

2) 
$$\frac{-8x+3}{-2x+4} = 1$$

1) 
$$\frac{10}{5x+5} = \frac{10}{-x-3}$$
 2)  $\frac{-8x+3}{-2x+4} = 1$  3)  $-\frac{9}{x-2} = \frac{6}{-2x+5}$  4)  $-\frac{3}{-3x-1} = -\frac{1}{2x}$ 

4) 
$$-\frac{3}{-3x-1} = -\frac{1}{2x}$$

**5**) 
$$\frac{7}{x-4} = \frac{5}{5x-5}$$
 **6**)  $-\frac{4}{3x} = -\frac{6}{-x+4}$  **7**)  $9x^2 - 9 = 0$ 

**6**) 
$$-\frac{4}{3x} = -\frac{6}{-x+4}$$

7) 
$$9x^2 - 9 = 0$$

**8**) 
$$(5x+4)(3x-5)+(10x-1)(3x-5)=0$$
 **9**)  $\frac{10}{-x+1}=\frac{5}{4x+2}$  **10**)  $\frac{6x-5}{-x-3}=1$ 

9) 
$$\frac{10}{-x+1} = \frac{5}{4x+2}$$

10) 
$$\frac{6x-5}{-x-3} = 1$$

11) 
$$-\frac{2}{3x-4} = -\frac{2}{5x+4}$$

**11**) 
$$-\frac{2}{3x-4} = -\frac{2}{5x+4}$$
 **12**)  $(-x+5)(5x+1) + (2x-2)(5x+1) = 0$  **13**)  $6x+2=5x-1$ 

**13**) 
$$6x + 2 = 5x - 1$$

**14**) 
$$(-x-2)(-4x+5) + (2x-5)(-4x+5) = 0$$
 **15**)  $10x+9 = -10x+5$  **16**)  $-\frac{3}{-x-3} = \frac{7}{5x-1}$ 

**15** ) 
$$10x + 9 = -10x + 8$$

**16**) 
$$-\frac{3}{-x-3} = \frac{7}{5x-1}$$

17) 
$$x = 3x + 9$$

18 ) 
$$7x - 8 = -10x +$$

**19**) 
$$-\frac{8x+3}{8x} = 1$$

**17**) 
$$x = 3x + 9$$
 **18**)  $7x - 8 = -10x + 2$  **19**)  $-\frac{8x + 3}{8x} = 1$  **20**)  $\frac{6}{x + 3} = -\frac{7}{-x + 5}$ 

**21**) 
$$\frac{4}{-5x+1} = \frac{8}{-x+4}$$

**21**) 
$$\frac{4}{-5x+1} = \frac{8}{-x+4}$$
 **22**)  $(-9x+4)(5x+1) + (x-5)(5x+1) = 0$  **23**)  $49x^2 - 64 = 0$ 

**23**) 
$$49x^2 - 64 = 0$$

**24**) 
$$\frac{2}{2x-5} = -\frac{5}{x-4}$$
 **25**)  $\frac{-8x-2}{-3x+4} = 0$  **26**)  $\frac{-10x+2}{-x-4} = 4$  **27**)  $5x+8=x-4$ 

**25**) 
$$\frac{-8x-2}{-3x+4} = 0$$

**26**) 
$$\frac{-10x+2}{-x-4} = 4$$

**27** ) 
$$5x + 8 = x - 4$$

**28** ) 
$$2x - 9 = 3x - 2$$

**29**) 
$$\frac{-10x-1}{x-1} = -$$

**28**) 
$$2x - 9 = 3x - 2$$
 **29**)  $\frac{-10x - 1}{x - 1} = -4$  **30**)  $(-5x - 5)(4x + 1) + (2x - 5)(4x + 1) = 0$ 

**31**) 
$$(5x-4)(-x+4)+(10x+1)(-x+4)=0$$
 **32**)  $6x-1=-6x-6$  **33**)  $-\frac{2}{-5x+2}=-\frac{10}{3x+1}$ 

**32** ) 
$$6x - 1 = -6x - 6$$

**33**) 
$$-\frac{2}{-5x+2} = -\frac{10}{3x+1}$$

**34**) 
$$(-10x-5)(3x+4)+(-6x+4)(3x+4)=0$$
 **35**)  $9x^2-1=0$  **36**)  $25x^2-36=0$ 

**35**) 
$$9x^2 - 1 = 0$$

**36** ) 
$$25x^2 - 36 = 0$$

**37**) 
$$\frac{8x+3}{6x+5} = -1$$

38) 
$$\frac{9x}{8x+2} = -$$

**37**) 
$$\frac{8x+3}{6x+5} = -1$$
 **38**)  $\frac{9x}{8x+2} = -4$  **39**)  $-\frac{3}{-x-1} = -\frac{6}{-3x-5}$  **40**)  $\frac{4x-5}{9x+3} = 4$ 

**40** ) 
$$\frac{4x-5}{9x+3} =$$

**41** ) 
$$25x^2 - 49 = 0$$

**41**) 
$$25x^2 - 49 = 0$$
 **42**)  $(-9x + 2)(-x + 2) + (7x + 2)(-x + 2) = 0$ 

**43**) 
$$4x(-3x+4) + (-9x-1)(-3x+4) = 0$$
 **44**)  $\frac{-9x+5}{2x} = 3$  **45**)  $49x^2 - 9 = 0$ 

**44**) 
$$\frac{-9x+5}{2x} = 3$$

**45** ) 
$$49x^2 - 9 = 0$$

**46**) 
$$-7x - 2 = 9x + 7$$

**47** ) 
$$64x^2 - 36 = 0$$

**46**) 
$$-7x - 2 = 9x + 7$$
 **47**)  $64x^2 - 36 = 0$  **48**)  $-\frac{1}{x+4} = -\frac{5}{3x+1}$  **49**)  $\frac{-x-4}{7x} = -1$ 

**49**) 
$$\frac{-x-4}{7x} = -1$$

**50** ) 
$$4x - 2 = 6x - 9$$

**50**) 
$$4x - 2 = 6x - 9$$
 **51**)  $-\frac{3}{-5x - 5} = \frac{8}{4x - 4}$  **52**)  $-\frac{8}{2x - 3} = -\frac{4}{2x - 2}$ 

**52**) 
$$-\frac{8}{2x-3} = -\frac{4}{2x-2}$$

**53**) 
$$\frac{7}{4x+2} = \frac{5}{-2x+3}$$
 **54**)  $(-6x-1)(-5x+4) + (-5x+5)(-5x+4) = 0$  **55**)  $\frac{-2x+4}{9x-2} = -4$ 

**55**) 
$$\frac{-2x+4}{9x-2} = -4$$

**56**) 
$$\frac{3}{-4x+3} = \frac{8}{-2x-3}$$
 **57**)  $16x^2 - 4 = 0$  **58**)  $-8x+7 = 5x-7$  **59**)  $49x^2 - 4 = 0$ 

**57** ) 
$$16x^2 - 4 = 0$$

**58**) 
$$-8x + 7 = 5x - 7$$

**59** ) 
$$49x^2 - 4 = 0$$

**60**) 
$$\frac{4}{-2x-1} = -\frac{1}{4x+4}$$
 **61**)  $\frac{-7x-3}{-x+1} = 4$  **62**)  $10x+7 = -4x+5$ 

**61**) 
$$\frac{-7x-3}{-x+1}=4$$

**62** ) 
$$10x + 7 = -4x + 5$$

**63**) 
$$(-7x-4)(x-4)+(-4x-3)(x-4)=0$$

**63**) 
$$(-7x-4)(x-4)+(-4x-3)(x-4)=0$$
 **64**)  $(-3x+4)(3x-5)+(6x+3)(3x-5)=0$ 

**65** ) 
$$x^2 - 25 = 0$$

**65**) 
$$x^2 - 25 = 0$$
 **66**)  $-\frac{10}{2x+3} = \frac{1}{3x-2}$  **67**)  $64x^2 - 64 = 0$  **68**)  $\frac{1}{4x+2} = \frac{9}{x+5}$ 

**67**) 
$$64x^2 - 64 = 0$$

**68**) 
$$\frac{1}{4x+2} = \frac{9}{x+5}$$

**69**) 
$$\frac{3}{-2x-2} = \frac{3}{-x-1}$$

**70** ) 
$$\frac{7}{2x-5} = \frac{5}{4x+5}$$

**69**) 
$$\frac{3}{-2x-2} = \frac{3}{-x-1}$$
 **70**)  $\frac{7}{2x-5} = \frac{5}{4x+5}$  **71**)  $(5x-2)(x+4) + (10x-4)(x+4) = 0$ 

**72**) 
$$9x - 1 = -6x - 7$$

**72**) 
$$9x - 1 = -6x - 7$$
 **73**)  $\frac{5}{x+5} = \frac{9}{3x+5}$  **74**)  $25x^2 - 16 = 0$ 

**74**) 
$$25x^2 - 16 =$$

## Entraı̂nement équations – Solutions

1 ) 
$$x = -\frac{4}{2}$$

**2** ) 
$$x = -\frac{1}{6}$$

**3**) 
$$x = \frac{11}{4}$$

**1**) 
$$x = -\frac{4}{3}$$
 **2**)  $x = -\frac{1}{6}$  **3**)  $x = \frac{11}{4}$  **4**)  $x = -\frac{1}{9}$  **5**)  $x = \frac{1}{2}$  **6**)  $x = \frac{8}{11}$ 

**5** ) 
$$x = \frac{1}{2}$$

**6** ) 
$$x = \frac{8}{11}$$

7) 
$$x = -1$$
 ou  $x = 1$ 

7) 
$$x = -1$$
 ou  $x = 1$  8)  $x = -\frac{1}{5}$  ou  $x = \frac{5}{3}$  9)  $x = -\frac{1}{3}$  10)  $x = \frac{2}{7}$  11)  $x = -4$ 

**9** ) 
$$x = -\frac{1}{3}$$

**10** ) 
$$x = \frac{2}{7}$$

11 ) 
$$x = -4$$

**12**) 
$$x = -3$$
 ou  $x = -\frac{1}{5}$  **13**)  $x = -3$  **14**)  $x = \frac{5}{4}$  ou  $x = 7$  **15**)  $x = -\frac{1}{5}$ 

**13** ) 
$$x = -3$$

**14**) 
$$x = \frac{5}{4}$$
 ou  $x = 7$ 

**15** ) 
$$x = -\frac{1}{5}$$

**16** ) 
$$x = 3$$

17) 
$$x = -\frac{9}{2}$$

**18** ) 
$$x = \frac{10}{17}$$

**16**) 
$$x = 3$$
 **17**)  $x = -\frac{9}{2}$  **18**)  $x = \frac{10}{17}$  **19**)  $x = -\frac{3}{16}$  **20**)  $x = -51$ 

**20** ) 
$$x = -51$$

**21** ) 
$$x = -\frac{2}{9}$$

**22**) 
$$x = -\frac{1}{5}$$
 ou  $x = -\frac{1}{8}$ 

**21**) 
$$x = -\frac{2}{9}$$
 **22**)  $x = -\frac{1}{5}$  ou  $x = -\frac{1}{8}$  **23**)  $x = -\frac{8}{7}$  ou  $x = \frac{8}{7}$  **24**)  $x = \frac{11}{4}$ 

**24**) 
$$x = \frac{11}{4}$$

**25**) 
$$x = -\frac{1}{4}$$
 **26**)  $x = 3$  **27**)  $x = -3$  **28**)  $x = -7$  **29**)  $x = -\frac{5}{6}$ 

**26** ) 
$$x = 3$$

**27** ) 
$$x = -3$$

**28** ) 
$$x = -7$$

**29** ) 
$$x = -\frac{5}{6}$$

**30**) 
$$x = -\frac{10}{3}$$
 ou  $x = -\frac{1}{4}$  **31**)  $x = \frac{1}{5}$  ou  $x = 4$  **32**)  $x = -\frac{5}{12}$  **33**)  $x = \frac{9}{28}$ 

**31** ) 
$$x = \frac{1}{5}$$
 ou  $x = 4$ 

**32**) 
$$x = -\frac{5}{12}$$

**33**) 
$$x = \frac{9}{20}$$

**34**) 
$$x = -\frac{4}{3}$$
 ou  $x = -\frac{1}{16}$  **35**)  $x = -\frac{1}{3}$  ou  $x = \frac{1}{3}$  **36**)  $x = -\frac{6}{5}$  ou  $x = \frac{6}{5}$  **37**)  $x = -\frac{4}{7}$ 

**35** ) 
$$x = -\frac{1}{3}$$
 ou  $x = \frac{1}{3}$ 

**36** ) 
$$x = -\frac{6}{5}$$
 ou  $x = \frac{6}{5}$ 

**37** ) 
$$x = -\frac{4}{7}$$

**38** ) 
$$x = -\frac{8}{41}$$

**39** ) 
$$x = -3$$

**40** ) 
$$x = -\frac{17}{32}$$

**38**) 
$$x = -\frac{8}{41}$$
 **39**)  $x = -3$  **40**)  $x = -\frac{17}{32}$  **41**)  $x = -\frac{7}{5}$  ou  $x = \frac{7}{5}$  **42**)  $x = 2$ 

**42** ) 
$$x =$$

**43**) 
$$x = -\frac{1}{5}$$
 ou  $x = \frac{4}{3}$  **44**)  $x = \frac{1}{3}$  **45**)  $x = -\frac{3}{7}$  ou  $x = \frac{3}{7}$  **46**)  $x = -\frac{9}{16}$ 

**44**) 
$$x = \frac{1}{3}$$

**45** ) 
$$x = -\frac{3}{7}$$
 ou  $x = \frac{3}{7}$ 

**46** ) 
$$x = -\frac{9}{16}$$

**47**) 
$$x = -\frac{3}{4}$$
 ou  $x = \frac{3}{4}$  **48**)  $x = -\frac{19}{2}$  **49**)  $x = \frac{2}{3}$  **50**)  $x = \frac{7}{2}$  **51**)  $x = -\frac{13}{7}$ 

**48** ) 
$$x = -\frac{19}{2}$$

**49** ) 
$$x = \frac{2}{3}$$

**50** ) 
$$x = \frac{7}{2}$$

**51** ) 
$$x = -\frac{16}{7}$$

**52** ) 
$$x = \frac{1}{2}$$

**53** ) 
$$x = \frac{11}{34}$$

**52**) 
$$x = \frac{1}{2}$$
 **53**)  $x = \frac{11}{34}$  **54**)  $x = \frac{4}{11}$  ou  $x = \frac{4}{5}$  **55**)  $x = \frac{2}{17}$  **56**)  $x = \frac{33}{26}$ 

**55**) 
$$x = \frac{2}{17}$$

**56** ) 
$$x =$$

**57**) 
$$x = -\frac{1}{2}$$
 ou  $x = \frac{1}{2}$ 

**58** ) 
$$x = \frac{14}{15}$$

**57**) 
$$x = -\frac{1}{2}$$
 ou  $x = \frac{1}{2}$  **58**)  $x = \frac{14}{13}$  **59**)  $x = -\frac{2}{7}$  ou  $x = \frac{2}{7}$  **60**)  $x = -\frac{15}{14}$ 

**60** ) 
$$x = -\frac{15}{14}$$

**61** ) 
$$x = -\frac{7}{3}$$

**62** ) 
$$x = -\frac{1}{7}$$

**33**) 
$$x = -\frac{7}{11}$$
 ou  $x = 4$ 

**61**) 
$$x = -\frac{7}{3}$$
 **62**)  $x = -\frac{1}{7}$  **63**)  $x = -\frac{7}{11}$  ou  $x = 4$  **64**)  $x = -\frac{7}{3}$  ou  $x = \frac{5}{3}$ 

**65** ) 
$$x = -5$$
 ou  $x = 5$ 

**66** ) 
$$x = \frac{17}{32}$$

**65**) 
$$x = -5$$
 ou  $x = 5$  **66**)  $x = \frac{17}{32}$  **67**)  $x = -1$  ou  $x = 1$  **68**)  $x = -\frac{13}{35}$ 

**68** ) 
$$x = -\frac{13}{35}$$

**69** ) 
$$x = -1$$

**70**) 
$$x = -\frac{10}{3}$$

**69**) 
$$x = -1$$
 **70**)  $x = -\frac{10}{3}$  **71**)  $x = -4$  ou  $x = \frac{2}{5}$  **72**)  $x = -\frac{2}{5}$  **73**)  $x = \frac{10}{3}$ 

**72**) 
$$x = -\frac{2}{5}$$

**73**) 
$$x = \frac{10}{2}$$

**74**) 
$$x = -\frac{4}{5}$$
 ou  $x = \frac{4}{5}$