

SHARP

Worksheet 4 – Solve for x Practice

1. Factorise the following:

a) $2x^2 - x - 15$

b) $2x^2 - \frac{5}{12}x - \frac{1}{12}$

c) $x^2 + 12x + 35$

d) $3d + e^2 + de + 3e$

e) $6x^2 - 19x + 10$

f) $x^2 + 25$

g) $\frac{1}{2}x^2 + \frac{1}{12}x - \frac{1}{6}$

h) $4x^2 - 19x + 21$

i) $3x^2 - 16x + 16$

j) $2x^2 - 5\frac{2}{5}x + 1$

k) $x^2 - 16$

l) $abc + a^3b + c^2 + a^2c$

m) $3x^2 - 2x + \frac{1}{3}$

n) $3x^3 - 81$

o) $2xy + 3 + 6x + y$

p) $2x^2 + 4x - 10\frac{1}{2}$

2. Solve for x by completing the square:

a) $x^2 + 3x - 5 = 0$

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

c) $x^2 - 4x + 3 = 0$

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

e) $x^2 + \frac{5}{2}x - \frac{4}{3} = 0$

f) $x^2 - 6x = -2$

g) $5x^2 - 25x + 70 = 0$

h) $2x^2 + 6x - 13 = 0$

i) $x^2 + 2x - 1 = 0$

j) $x^2 - 3x - 9 = 0$

3. Solve the following inequalities:

a) $x(x + 2) \leq 3(x + 2)$

b) $2x(x - 4) > -8(4 + 3x)$

c) $2x^2 - 5x < 3$

d) $x^2 + 4x - \frac{1}{16} \geq 4x$

e) $3x(x + 4) > x + 20$

f) $3x^2 + 15x < 42$

g) $3x(x - 4) \leq 1 - \frac{1}{4}x$

h) $x^2 - 2x \leq 15(x + 4)$

i) $x^2 - 3\frac{1}{2}x + \frac{3}{2} > 0$

j) $3x(x + 9) \geq 5(x - 7)$

4. Solve the following simultaneous equations for x and y .

- a) $y = -x + 5$ and $x^2 + 3x + y^2 - 5y = 12$
- b) $y = -2x$ and $x^2 - 2x + y^2 + 4y = 15$
- c) $3y = x + 14$ and $2x^2 - 6x + y^2 - 4y = 20$
- d) $4y = x - 16$ and $x^2 - 4x + 2y^2 + y = 15$
- e) $5y = 2x + 31$ and $x^2 + 3x + y^2 - 5y = 24$
- f) $y + x = 12$ and $3x^2 - 9x + y^2 - 9y - 16 = 0$
- g) $y + 1 = x$ and $x^2 - 3x + 2y^2 + y = 25$
- h) $y = 5x - 12$ and $2x^2 - 5x + 3y^2 - 4y = 18$
- i) $y + 7x = 24$ and $2x^2 - 7x + y^2 + 2y = 12$
- j) $2y = x - 2$ and $x^2 - \frac{3}{2}x + y^2 + 5y = 16$

5. Solve for x :

- a) $\frac{1}{x+1} = \frac{3}{x+2}$
- b) $\frac{x+2}{3} = \frac{x-3}{4}$
- c) $\frac{5}{x+2} = \frac{x-2}{3}$
- d) $\frac{3}{x+2} + \frac{2}{x-3} = \frac{1}{x-2}$
- e) $\frac{4}{x-2} = \frac{x}{x+3}$
- f) $\frac{2}{x-5} = \frac{x}{x-3}$
- g) $\frac{3}{x+4} = \frac{1}{x-2} - \frac{3}{x}$
- h) $\frac{3}{x-2} = \frac{4}{x+2} - \frac{5}{x}$
- i) $\frac{1}{2x-4} = \frac{2}{3x-4}$
- j) $\frac{7}{x-1} + \frac{3}{x+2} = \frac{x}{x-1}$

6. Solve for x :

- a) $3^x = 27$
- b) $2.5^x = 250$
- c) $x^3 = 64$
- d) $x^5 = 32$
- e) $2^3 = x$
- f) $4^0 = x$
- g) $2^x + 2^{x-1} = 12$
- h) $4.5^x - 4.5^{x-1} = \frac{16}{25}$
- i) $3^{x+1} - 3^{x-1} = \frac{8}{27}$
- j) $2^x - 2^{x-4} = 30$