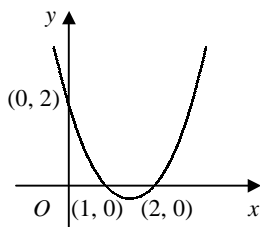


ALGEBRA

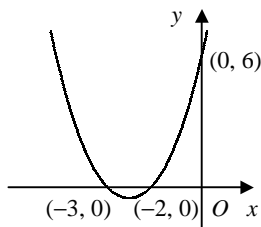
Answers

- 1** **a** $(x+1)(x+3)$ **b** $(x+2)(x+5)$ **c** $(y-1)(y-2)$ **d** $(x-3)^2$
e $(y+1)(y-2)$ **f** $(a+4)(a-2)$ **g** $(x+1)(x-1)$ **h** $(p+2)(p+7)$
i $(x+3)(x-5)$ **j** $(m-2)(m-8)$ **k** $(t+6)(t-3)$ **l** $(y-5)(y-8)$
m $(r+4)(r-4)$ **n** $(y+7)(y-9)$ **o** $(a+11)^2$ **p** $(x+12)(x-6)$
q $(x-2)(x-13)$ **r** $(s+8)(s+15)$ **s** $(p+17)(p-3)$ **t** $(m-10)(m+9)$
- 2** **a** $(2x+1)(x+1)$ **b** $(3p+1)(p+2)$ **c** $(2y-3)(y-1)$ **d** $(2+m)(1-m)$
e $(3r+1)(r-1)$ **f** $(5+y)(1-4y)$ **g** $(3a-1)(a-4)$ **h** $(5x+2)(x-2)$
i $(2x+1)(2x+3)$ **j** $(3s-1)^2$ **k** $(2m+5)(2m-5)$ **l** $(2+3y)(1-2y)$
m $(4u+1)(u+4)$ **n** $(3p+4)(2p-1)$ **o** $(8x+3)(x+2)$ **p** $(6r-5)(2r+3)$
- 3** **a** $(x-1)(x-3) = 0$
 $x = 1$ or 3 **b** $(x+4)(x+2) = 0$
 $x = -4$ or -2 **c** $(x+5)(x-1) = 0$
 $x = -5$ or 1 **d** $x^2 - 7x - 8 = 0$
 $(x+1)(x-8) = 0$
 $x = -1$ or 8
e $(x+5)(x-5) = 0$ **f** $x^2 - x - 42 = 0$ **g** $x^2 - 3x = 0$ **h** $(x+9)(x+3) = 0$
 $x = -5$ or 5 $(x+6)(x-7) = 0$ $x(x-3) = 0$ $x = -9$ or -3
 $x = -6$ or 7 $x = 0$ or 3
i $x^2 + 4x - 60 = 0$ **j** $x^2 - 5x - 14 = 0$ **k** $(2x-1)(x-1) = 0$ **l** $x^2 - x = 6x - 12$
 $(x+10)(x-6) = 0$ $(x+2)(x-7) = 0$ $x = \frac{1}{2}$ or 1 $x^2 - 7x + 12 = 0$
 $x = -10$ or 6 $x = -2$ or 7 $(x-3)(x-4) = 0$
 $x = 3$ or 4
- m** $3x^2 + 11x - 4 = 0$ **n** $2x^2 - 3x - 5 = 0$ **o** $4x^2 - 23x - 6 = 0$ **p** $6x^2 - 19x + 10 = 0$
 $(3x-1)(x+4) = 0$ $(2x-5)(x+1) = 0$ $(4x+1)(x-6) = 0$ $(3x-2)(2x-5) = 0$
 $x = -4$ or $\frac{1}{3}$ $x = -1$ or $\frac{5}{2}$ $x = -\frac{1}{4}$ or 6 $x = \frac{2}{3}$ or $\frac{5}{2}$
- q** $(2x+1)^2 = 0$ **r** $3x^2 - 13x + 12 = 0$ **s** $4x^2 + 20x + 25 = 5 - x$ **t** $6x^2 - 21x = 14x + 6$
 $x = -\frac{1}{2}$ $(3x-4)(x-3) = 0$ $4x^2 + 21x + 20 = 0$ $6x^2 - 35x - 6 = 0$
 $x = \frac{4}{3}$ or 3 $(4x+5)(x+4) = 0$ $(6x+1)(x-6) = 0$
 $x = -4$ or $-\frac{5}{4}$ $x = -\frac{1}{6}$ or 6
- 4** **a** $= 2(y^2 - 5y + 6)$ **b** $= x(x^2 + x - 2)$ **c** $= p(p^2 - 4)$ **d** $= 3m(m^2 + 7m + 6)$
 $= 2(y-3)(y-2)$ $= x(x-1)(x+2)$ $= p(p+2)(p-2)$ $= 3m(m+1)(m+6)$
e $= (a^2 + 1)(a^2 + 3)$ **f** $= (t^2 + 5)(t^2 - 2)$ **g** $= 4(3 + 5x - 2x^2)$ **h** $= 3(2r^2 - 3r - 14)$
 $= 4(3-x)(1+2x)$ $= 3(2r-7)(r+2)$
i $= 2x(3x^2 - 13x + 4)$ **j** $= y^2(y^2 + 3y - 18)$ **k** $= (m^2 + 1)(m^2 - 1)$ **l** $= p(p^4 - 4p^2 + 4)$
 $= 2x(3x-1)(x-4)$ $= y^2(y+6)(y-3)$ $= (m^2+1)(m+1)(m-1)$ $= p(p^2 - 2)^2$

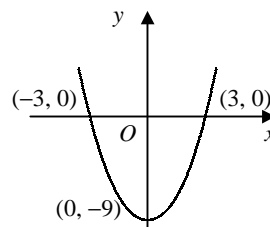
5 a $x^2 - 3x + 2 = 0$
 $(x - 1)(x - 2) = 0$
 $x = 1$ or 2



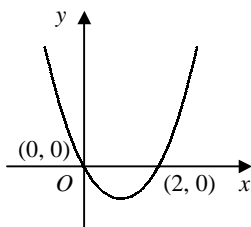
b $x^2 + 5x + 6 = 0$
 $(x + 3)(x + 2) = 0$
 $x = -3$ or -2



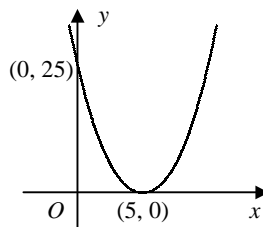
c $x^2 - 9 = 0$
 $(x + 3)(x - 3) = 0$
 $x = -3$ or 3



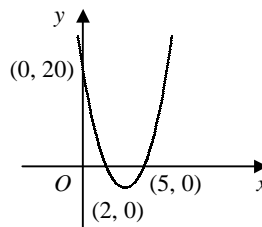
d $x^2 - 2x = 0$
 $x(x - 2) = 0$
 $x = 0$ or 2



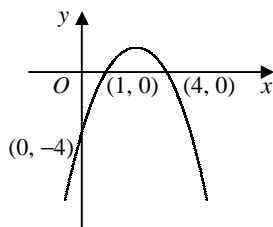
e $x^2 - 10x + 25 = 0$
 $(x - 5)^2 = 0$
 $x = 5$



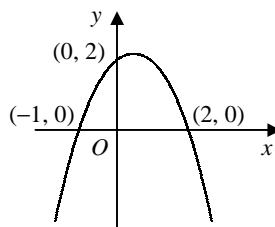
f $2x^2 - 14x + 20 = 0$
 $2(x - 2)(x - 5) = 0$
 $x = 2$ or 5



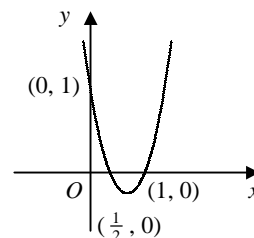
g $-x^2 + 5x - 4 = 0$
 $x^2 - 5x + 4 = 0$
 $(x - 1)(x - 4) = 0$
 $x = 1$ or 4



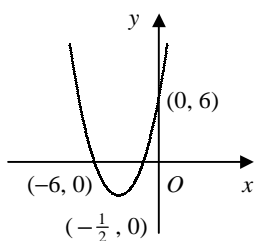
h $2 + x - x^2 = 0$
 $x^2 - x - 2 = 0$
 $(x + 1)(x - 2) = 0$
 $x = -1$ or 2



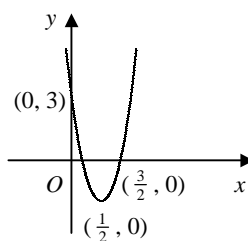
i $2x^2 - 3x + 1 = 0$
 $(2x - 1)(x - 1) = 0$
 $x = \frac{1}{2}$ or 1



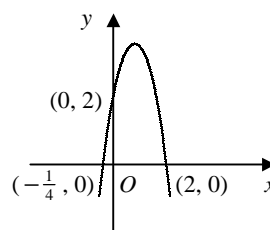
j $2x^2 + 13x + 6 = 0$
 $(2x + 1)(x + 6) = 0$
 $x = -6$ or $-\frac{1}{2}$



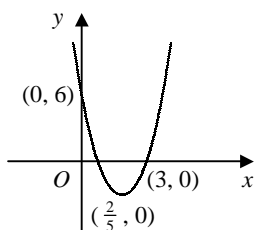
k $3 - 8x + 4x^2 = 0$
 $(2x - 1)(2x - 3) = 0$
 $x = \frac{1}{2}$ or $\frac{3}{2}$



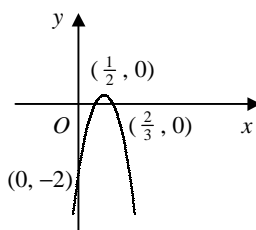
l $2 + 7x - 4x^2 = 0$
 $4x^2 - 7x - 2 = 0$
 $(4x + 1)(x - 2) = 0$
 $x = -\frac{1}{4}$ or 2



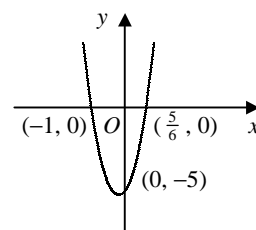
$$\begin{aligned} \text{m } 5x^2 - 17x + 6 &= 0 \\ (5x - 2)(x - 3) &= 0 \\ x &= \frac{2}{5} \text{ or } 3 \end{aligned}$$



$$\begin{aligned} \text{n } -6x^2 + 7x - 2 &= 0 \\ 6x^2 - 7x + 2 &= 0 \\ (2x - 1)(3x - 2) &= 0 \\ x &= \frac{1}{2} \text{ or } \frac{2}{3} \end{aligned}$$



$$\begin{aligned} \text{o } 6x^2 + x - 5 &= 0 \\ (6x - 5)(x + 1) &= 0 \\ x &= -1 \text{ or } \frac{5}{6} \end{aligned}$$



$$\begin{aligned} \text{6 a } x^2 - 5x + 4 &= 0 \\ (x - 1)(x - 4) &= 0 \\ x &= 1 \text{ or } 4 \end{aligned}$$

$$\begin{aligned} \text{b } x^2 - 10 &= 3x \\ x^2 - 3x - 10 &= 0 \\ (x + 2)(x - 5) &= 0 \\ x &= -2 \text{ or } 5 \end{aligned}$$

$$\begin{aligned} \text{c } x(2x^2 - x - 3) &= 0 \\ x(2x - 3)(x + 1) &= 0 \\ x &= -1, 0 \text{ or } \frac{3}{2} \end{aligned}$$

$$\begin{aligned} \text{d } 10x^2 - x^4 &= 9 \\ x^4 - 10x^2 + 9 &= 0 \\ (x^2 - 1)(x^2 - 9) &= 0 \\ x^2 &= 1 \text{ or } 9 \\ x &= \pm 1 \text{ or } \pm 3 \end{aligned}$$

$$\begin{aligned} \text{e } 5 + 4x - x^2 &= 0 \\ x^2 - 4x - 5 &= 0 \\ (x + 1)(x - 5) &= 0 \\ x &= -1 \text{ or } 5 \end{aligned}$$

$$\begin{aligned} \text{f } x - 6 &= x(x - 4) \\ x - 6 &= x^2 - 4x \\ x^2 - 5x + 6 &= 0 \\ (x - 2)(x - 3) &= 0 \\ x &= 2 \text{ or } 3 \end{aligned}$$

$$\begin{aligned} \text{g } (x + 5)(x + 3) &= 3 \\ x^2 + 8x + 15 &= 3 \\ x^2 + 8x + 12 &= 0 \\ (x + 6)(x + 2) &= 0 \\ x &= -6 \text{ or } -2 \end{aligned}$$

$$\begin{aligned} \text{h } x^4 - 4 &= 3x^2 \\ x^4 - 3x^2 - 4 &= 0 \\ (x^2 + 1)(x^2 - 4) &= 0 \\ x^2 &= -1 \text{ (no sol's) or } 4 \\ x &= \pm 2 \end{aligned}$$

$$\begin{aligned} \text{i } 4x^4 + 7x^2 - 2 &= 0 \\ (4x^2 - 1)(x^2 + 2) &= 0 \\ x^2 &= -2 \text{ (no sol's) or } \frac{1}{4} \\ x &= \pm \frac{1}{2} \end{aligned}$$

$$\begin{aligned} \text{j } 2x(x + 2) &= 3 - x \\ 2x^2 + 4x &= 3 - x \\ 2x^2 + 5x - 3 &= 0 \\ (2x - 1)(x + 3) &= 0 \\ x &= -3 \text{ or } \frac{1}{2} \end{aligned}$$

$$\begin{aligned} \text{k } x(2x + 1) &= 2(x + 3) \\ 2x^2 + x &= 2x + 6 \\ 2x^2 - x - 6 &= 0 \\ (2x + 3)(x - 2) &= 0 \\ x &= -\frac{3}{2} \text{ or } 2 \end{aligned}$$

$$\begin{aligned} \text{l } 7 - 3x(x + 2) &= 2(x + 2) \\ 7 - 3x^2 - 6x &= 2x + 4 \\ 3x^2 + 8x - 3 &= 0 \\ (3x - 1)(x + 3) &= 0 \\ x &= -3 \text{ or } \frac{1}{3} \end{aligned}$$