***EXPANSION***

***Summary:***

***(i)*** *To expand is to remove the brackets from an expression. Thus in expanded form* ***a(x + 5) = ax + 5a***

***(ii)*** *To multiply two brackets, the first bracket is multiplied by each term in the second bracket*

***EXAMPLES:***

***1.*** *Remove the brackets and simplify* ***:***

***(i)*** ***(ii)(x + 5)(x + 3) (iii) (3x + 2)(x− 4)***



***(iv) 5(x − 3)(3x − 2) (v) (vi)***  ***(vii) (viii)***  ***(ix)***  ***(x) (xi) (xii) (xiii)***



***QUADRATIC IDENTITIES***

***Summary:***

*The following expansions result into****:***

***(i)***



***(ii)***



***(iii)***



***EXAMPLES:***

***1.****Use the result to evaluate the following****:***



***(i) (ii) (iii)***



***Soln:***

***(i)*** *If*



***2.****Use the result to evaluate the following****:***



***(i) (ii) (iii)***



***Soln:***

***(i)*** *If*



***3.*** *If  find the values of* ***a*** *and* ***b***

***4.*** *Express in the form*



***5.*** *Express in the form*



***6.*** *Given that* *and* ***xy = 4,*** *find the values of****:***



***(i)***



***(ii)*** ***x − y***

***7.*** *If*  *find the values of****:***



***(i)*** ***(ii)***



***8.*** *Find the coefficient of in the expansion of*



***9.*** *Find the coordinates of point* ***P*** *on the* ***x−****axis which is equidistant from the points* ***A(5, 9)*** *and* ***B(−4, 6)***

***10.*** *Find the equation of the locus of points equidistant from point* ***P(6, 0)*** *and*  ***Q(−8, 4)***

***EER:***

***1.*** *Expand the following expressions****:***

***(i) (2x + 5)(x + 3) (ii) (3x + 2)(4x− 7) (iii) 3(x − 4)(5x − 3)***

***(iv)******(v)******(vi)***



***2.*** *Make* ***P*** *the subject in the given formula*



***4.*** *Expand the expression*



***5.*** *Expand the expression*



***6.*** *Simplify the expression*



***7. (i)*** *Write down the expansion of*



***(ii)****Use the result in* ***(i)*** *above to evaluate*



***8.*** *Expand and simplify*



***9.*** *Express in the form*



***10.*** *If find the vales of* ***a, b*** *and* ***c***



***11.*** *Given that* *and* ***x + y = 3,*** *find the values of****:***



***(i)***



***(ii)***



***(iii)***



***(iv) x − y,*** *hence solve for* ***x*** *and* ***y***

***12.*** *If*  *find the values of*



***13.*** *Express in the form*



***14.*** *If find the vales of* ***a*** *and* ***b***



***15.*** *If*  *and* ***xy = 10,*** *find the value of*



***16.*** *If find the vales of* ***a*** *and* ***b***



***17.*** *If find the value of* ***k***



***18.*** *Find the coordinates of point* ***P*** *on the* ***y−****axis which is equidistant from the points* ***A(−5, −2)*** *and* ***B(3, 2)***

***19.*** *A point* ***P(x, y)*** *moves such that its distance from the origin****, O*** *is equal to its distance from the point* ***Q(1, 2).*** *Find the locus (equation) relating* ***x*** *and* ***y.***

***FACTORING BY GROUPING***

***Summary:***

***1. (i)*** *To factorise is to write the expression as a product of its factors. Thus in factorised form and*



***(ii)*** *To factorise by grouping****,*** *an expression must have four terms*

***2.*** *This method of factoring is performed as follows****:***

***(i)*** *Factor out the* ***HCF*** *if any*

***(ii)*** *Group the terms with common factors*

***(iii)*** *Factor each group*

***EXAMPLES:***

***1.*** *Factorise the following expressions completely****:***

***(i) ah + ak + bh + bk (ii) 6mx − 3nx + 2my − ny***

***(iii) (iv) 6ah − 3ak + bk − 2bh***



***(vi) 2ab − 3 + 2a − 3b (vii)***



***2.*** *Without using a calculator or tables****,*** *evaluate****:***

***(i) 0⋅25 × 2195 − 1795 × 0⋅25 (ii) 65 × 43⋅6 + 65 × 37⋅2 − 65 × 70⋅8***

***(iii) (iv)***



***(v)***



***EER:***

***1.*** *Factorise the following expressions completely****:***

***(i)*** ** ***(ii)*** **

***(iii)*** ** ***(iv)*** **

***(v)*** ** ***(vi)*** **

***(vii)*** **  ***(viii)*** **

***2.*** *Without using a calculator or tables****,*** *evaluate****: 0⋅35 × 2595 − 2495 × 0⋅35***

***3.*** *Use factors to evaluate****: 14 × 398 − 198 × 14***

***4.*** *Use factors to evaluate****: 617 × 793 + 786 × 793 + 597 × 793***

***5.*** *Without using a table or a calculator, evaluate****:*** 

***6.*** *By first removing the brackets, factorise completely *

***THE DIFFERENCE OF TWO SQUARES***

***Summary:***

*The result is called the difference of two squares*



***EXAMPLES:***

***1.*** *Show that*



***2.*** *Factorise the following expressions completely****:***

***(i) (ii) (iii) (iv)***



***(v) (vi)*** ***(vii) (viii)***



***(ix) (x)*** ***(xi) (xii)***



***(xiii) (xiv)*** ***(xv) (xvi)***



***3.*** *Factorise the following expressions completely****:***

***(i) (ii) (iii)***



***(iv)*** ** ***(v)***  ***(vi) (vii)***



***4.*** *Without using a calculator or tables****,*** *evaluate****:***

***(i) (ii) (iii)***



***(iv)***  ***(v)***



***(vi)*** ***(vii)***



***5.*** *Given that and find the values of****:***



***(i) (ii)****and*



***6.*** *Given that and find the values of* *and*



***7.*** *Given that* *and* ***xy = 4,*** *find the values of****:***



***(i)***



***(ii)*** ***x − y***

***(iii)***



***8.*** *If*  *find the values of****:***



***(i)***



***(ii)***



***(iii)***



***EER:***

***1.*** *Factorise completely *

***2.*** *Factorise completely *

***3.*** *Factorise completely *

***4.*** *Factorise completely *

***5.*** *Factorise completely *

***6.*** *Factorise completely *

***7.*** *Factorise completely *

***8.*** *By first removing the brackets, factorise completely* ***y(ay − x) + x(y− ax)***

***9.*** *Without using a calculator or tables****,*** *evaluate the following****:***

***(i)*** ** ***(ii)*** ** ***(iii)*** **

***(iv)*** **  ***(v)*** ** ***(vi)***

***10.*** *Without using a calculator or tables****,*** *evaluate****:*** **

***11.*** *Without using a calculator or tables****,*** *evaluate****:*** **

***12.*** *Factorise the following expressions completely****:***

***(i)*** ** ***(ii)*** *****(iii)*** ** ***(iv)*** ** ***(v)*** ** ***(vi)*** ** ***(vii)*** ** ***(viii)*** ** ***(ix)*** ** ***(x)*** ** ***(xi)*** ** ***( xii)*** *****(xiii)*** ** ***(xiv)*** ** ***(xv)***

***13.*** *Factorize*  *hence find the value of* 

***14.*** *Given that  and  find the values of **and***

***15.*** *Given that  and  find the values of **and***

***16.*** *Given that  and  find the values of **and***

***17*** *Factorise completely *

***18.*** *Factorise completely *

***19.*** *Factorise completely *

***20.*** *Factorise completely *

***21.*** *Factorise completely *

***22.*** *Factorise completely *

***FACTORING QUADRATICS***

***Summary:***

***1.*** *A quadratic expression is written in the form*



***2.*** *The following apply when factoring a quadratic expression*



***(i)*** *Find two numbers which multiply to give* ***ac*** *and add up to* ***b***

***(ii)*** *Replace* ***b*** *with the sum of those numbers*

***(iii)*** *Factor the terms by grouping*

***EXAMPLES:***

***1.*** *Factorise the following expressions completely****:***

***(i) (ii)*** ***(iii)***



***(iv) (v)*** ***(vi)***



***(vii) (vii)*** ***(ix)***



***(x) (xi)*** ***(xii)*** 



***2.*** *Factorise the following expressions completely****:***

***(i) (ii)***



***(iii)***  ***(iv)***



***(v)*** **

***3.*** *Simplify the following fractions as far as possible****:***

***(i)*** ***(ii) (iii)***   ***(iv)*** ***(v)***



***4.*** *Express in the form *



***5.*** *Express in the form*



***6.*** *Express in the form*



***7.*** *Express  in the form*

***EER:***

***1.*** *Factorise the following expressions completely****:***

***(i)*** ** ***(ii)*** ** ***(iii)*** **

***(iv)*** ** ***(v)*** ** ***(vi)*** **

***(vii)*** ** ***(viii)*** ** ***(ix)*** **

***(x)*** ** ***(xi)*** ** ***(ix)*** **

***2.*** *By first simplifying the expression factorise completely*



***3.*** *By first simplifying the expression factorise completely *

***4.*** *Factorise *

***5.*** *Factorise *

***6.*** *Factorise completely *

***7.*** *Factorise *

***8.*** *Factorise *

***9.*** *Factorise completely *

***10.*** *Factorise completely *

***11.*** *Simplify the following fractions* *as far as possible****:***

***(i)*** ** ***(ii)*** ** ***(iii)*** **

***(iv)*** ** ***(v)*** ** ***(vi)*** **

***(vii)*** ** ***(viii)*** ** ***(ix)*** **

***12.*** *Simplify  hence solve* 

***13.*** *Express*  *in the form *

***14.*** *Express in the form*



***15.*** *Express  in the form *

***16.*** *Express  in the form *

***SOLVING QUADRATIC BY FACTORING***

***Summary:***

***1.*** *A quadratic equation is written in the form*



***2.*** *A quadratic equation has two solutions often called the roots of the equation. It is possible for the two solutions to be the same*

***3.*** *This method uses the fact that if* ***m×n = 0,*** *then* ***m = 0*** *or* ***n = 0***

***EXAMPLES:***

***1.*** *Solve the following equations****:***

***(i) (ii)*** ***(iii)***



***(iv) (v)*** ***(vi)***



***(vii) (vii)*** ***(ix)***



***(x) (xi)***



***(xii)***



***2.*** *Factorise hence solve the equation*



***3.*** *Factorise  hence solve the equation *

***4.*** *Solve the following equations****:***

***(i) (ii)*** ***(iii)***



***(iv) (v)***



***SOLVING QUADRATIC BY FORMULA***

***Summary:***

*If then*



***EXAMPLES:***

***1.*** *Solve the following equations****:***

***(i) (ii)******(iii)***



***(iv)***



***EER:***

***1.*** *Factorise  hence solve the equation *

***2.*** *Use the factorisation method to solve the equation****:*****

***3.*** *Factorise hence solve the equation *

***4.*** *Given that* ***p↑ q*** ***=***  *find the values of****:***

***(i) 2↑ 9***

***(ii)*** ***p*** *if* ***p↑ 4 = 29***

***5.*** *If*  *make* ***x*** *the subject of the formula*

***6.*** *Solve the equation****:***



***7.*** *Solve the equation*



***8.*** *Solve the equation****:***



***9.*** *Solve the following equations****:***

***(i)*** ** ***(ii)*** ** ***(iii)*** ** ***(iv)*** ** ***(v)*** ** ***(vi)*** ** ***(vii)***** ***(viii)*** ** ***(ix)***** ***(x)*** ** ***(xi)*** ** ***(xii)*** ** ***(xiii)*** **

***10.*** *Solve the following equations****:***

***(i)***  ***(ii)*** ** ***(iii)*** **  ***(iv)*** ** ***(v)*** ***(vi)*** ** ***(vii)*** ** ***(viii)*** ** ***(ix)*** **  ***(x)******(xi)******(xii)*** **

***SOLVING QUADRATIC BY COMPLETING SQUARES***

***Summary:***

***(i)*** *A quadratic perfect square is written in the form*



***(ii)*** *In completing squares****,*** *the original equation is first expressed in the form and then solved*



***EXAMPLES:***

***1.*** *Express in the form Hence solve the equation*



***2.*** *Express in the form Hence solve the equation*



***3.*** *Express in the form Hence solve the equation*



***4.*** *Express in the form Hence solve the equation*



***5.*** *Solve the equation by the method of completing squares*



***6.*** *Given that is a perfect square****,*** *find the value of* ***k***



***EER:***

***1.*** *If  find the values of* ***a*** *and* ***b***

***QUADRATIC WORD POBLEMS***

***EXAMPLES:***

***1.*** *A rectangle of length* ***(3x + 1)cm*** *and width* ***(3x − 2)cm*** *has an area of * *Find the dimensions and perimeter of the rectangle*

***2.*** *A man is* ***22*** *years older than his son. The product of their ages is* ***240*** *years****.*** *Find their present ages*

***3.*** *Find the values of* ***x*** *for which the fraction* *is undefined*

***4.*** *The distance between the point* ***(k, k+2)*** *and the origin is* ***10 units.*** *Find the possible values of* ***k***

***5.*** *Find the value of* ***n*** *in the following equations****:***

***(i)*** ***(ii)***



***6.*** *Solve the following simultaneous equations****:***



***7.*** *Find the coordinates of the point of intersection of the line* ***y = 2 − 3x*** *and the*

*curve*



***8.*** *Find the area of a right triangle whose hypotenuse is* ***13cm*** *long and its perimeter is* ***30cm.***

***9.*** *The cost of* ***n*** *pens is* ***Shs 7,500.*** *This same amount of money can buy five extra pens if a discount of* ***Shs 50*** *per pen is given****.*** *Find the cost of each pen*

***10.*** *A basin can be filled by tap* ***P*** *in* ***10*** *minutes less than* ***Q.*** *If the two taps take* ***12*** *minutes to fill this basin when they are turned on at once****,*** *find the time taken by each tap separately to fill the basin****.***

***11.*** *A train takes two hours less for a journey of* ***300km*** *if its speed is increased by from its normal speed****.*** *Find its normal speed*



***12. ABCD*** *is a rectangle in which* ***AB = 12cm, BC = 7cm*** *and* ***AK = BL = CM***

***= DN = y cm.***

***A***

***B***

***C***

***D***

***K***

***L***

***M***

***N***

*If the area of* ***KLNM*** *is find the value of* ***y***

***FORMING A QUADRATIC EQUATION***

***Summary:***

*The relation*  *is used to form a quadratic equation whose roots are known*



***EXAMPLES:***

***1.*** *Form a quadratic equation whose roots are* ***2*** *and* ***3***

***2.*** *Form a quadratic equation whose roots are* ***−5*** *and* ***2***

***3.*** *Form a quadratic equation whose solution set is* ***{−7, 3}***

***4.*** *Form a quadratic equation whose roots are* ***−2*** *and*



***EER:***

***1.*** *The length of a rectangular floor is* ***8*** *metres longer than its width. If the area of the floor is find the dimensions and perimeter of the floor.*



***2.*** *If*  *find the value of* ***n***

***3.*** *A number exceeds four times its reciprocal by* ***3.*** *Find the number****.***

***4.*** *Find the area of a right triangle whose hypotenuse is* ***34cm*** *long and its perimeter is* ***80cm.***

***5.*** *Find the number which when added to its square gives a total of* ***42***

***6.*** *Find the dimensions of the rectangle whose diagonal is* ***10cm*** *long and its length exceeds the width by* ***2cm.***

***7.*** *Find the dimension of a rectangle whose area is and its perimeter is* ***34cm.***

***8.*** *If find the base that* ***n*** *represents*



***9.*** *Express in the form Hence solve the equation*



***10.*** *Solve for* ***y*** *in the following equations****:***

***(i)***  ***(ii)***



***11.*** *Given that vector find the possible values of* ***x*** *for which*



***12.*** *The distance between the points* ***(4, 8)*** *and* ***(1, k)*** *is* ***5 units.*** *Find the possible values of* ***k***

***13.*** *A rectangle of length* ***(4x − 1)cm*** *and width* ***2x cm*** *has an area of*  *Find:*



***(i)*** *the value of* ***x***

***(ii)*** *its length and width*

***(iii)*** *its perimeter*

***14.*** *Find the coordinates of the points of intersection of the curve and the line* ***y = 7.***



***15.*** *A right angled triangle of base* ***(x − 4)cm*** *and height* ***(x − 2)cm*** *has a hypotenuse of* ***xcm*** *long****.*** *Find****:***

***(i)*** *the value of* ***x***

***(ii)*** *its dimensions*

***(iii)*** *its perimeter and area*

***16.*** *A right angled triangle of base* ***xcm*** *and height* ***(x − 7)cm*** *has a hypotenuse of* ***(x + 1)cm*** *long****.*** *Find****:***

***(i)*** *the value of* ***x***

***(ii)*** *its base and height*

***(iii)*** *its perimeter and area*

***17.*** *Find the coordinates of the points of intersection of the curve and the line* ***y + 6 = 0***



***18.*** *Find the coordinates of the point of intersection of line* ***y − 5x + 9 = 0*** *and the curve* 

***19.*** *Find the values of* ***x*** *for which the fraction* *is undefined*

***20.*** *A group of people planned to contribute equally towards a water project which needed* ***Shs 2,000,000*** *to complete****.*** *However****, 40*** *members of the group withdrew from the project****.*** *As a result****,*** *each of the remaining members was to contribute* ***Shs 2500*** *more****. (a)*** *Find the original number of members in the group* ***(b)*** *Forty five percent of the value of the project was donated by the Development Bank****.*** *Calculate the amount required to be contributed by each of the remaining members of the group* ***(c)*** *Members contribution was in terms of labour provided and money contributed. The ratio of the value of labour to the money contributed was* ***6:19,*** *calculate the total amount of money contributed by the members*

***21.*** *The figure below shows an* ***L−****shaped carpet* ***ABCDEF*** *in which* ***CD = 2m,***

***BC = EF = (3x − 2)m*** *and* ***AF = (2x + 5)m.***

***F***

***(3x − 2)m***

***(3x − 2)m***

***(2x + 5)m***

***2m***

***D***

***B***

***A***

***C***

***E***

*Given that the area of the carpet is* 

***(a)*** *Show that *

***(b)*** *Calculate the****:***

***(i)*** *length of the longest side of the carpet*

***(ii)*** *perimeter of the carpet*

***GRAPHING QUADRATIC CURVES***

***Summary:***

***1. (i)*** *By drawing a suitable line****,*** *a quadratic graph can be used to solve related equations*

***(ii)*** *The solution to the equation are the x−values at the point where the graphs meet*

***2.*** *The appropriate line is obtained as follows****:***

***(i)*** *Compare the equation to that of the graph*

***(ii)*** *Eliminate the term in*  *to obtain the line*

***3. (i)*** *The curve*  *has a vertical line of symmetry whose equation is given by*



***(ii)*** *The maximum or minimum value of the function occur at its turning points*

***EXAMPLES:***

***1.*** *Find the equation of the line which should be drawn on the graph* *to solve each of these equations****:***

***(i)***  ***(ii)***  ***(iii)*** 

***(iv)***  ***(v)***  ***(vi)*** 

***2. (a)*** *Draw a graph of*  *for* ***0 ≤ x ≤ 4 (****use a scale of* ***2cm:1******unit*** *on both axes* ***)***

***(b)*** *Use your graph to solve the equations****:***

***(i)*** 

***(ii)*** 

***(c)*** *State the****:***

***(i)*** *equation of the line of symmetry*

***(ii)*** *minimum value of* ***y***

***(iii)*** *value of* ***x*** *at which the minimum value of* ***y*** *occurs*

***(iv)*** *range of values of* ***x*** *for which* 

***3. (a)*** *Draw a graph of*  *for* ***−3 ≤ x ≤ 4 (****use a scale of* ***1cm:1******unit*** *on both axes* ***)***

***(b)*** *Use your graph to solve the equations****:***

***(i)*** 

***(ii)*** 

***(iii)*** 

***(iv)*** 

***(c)*** *State the****:***

***(i)*** *equation of the line of symmetry*

***(ii)*** *range of values of* ***x*** *for which* 

***4. (a)*** *Copy and complete the table below for the function* 

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***x*** | ***−5*** | ***−4*** | ***−3*** | ***−2*** | ***−1*** | ***0*** | ***1*** | ***2*** |
|  |  |  |  | ***−4*** |  |  |  | ***−4*** |
|  |  |  |  | ***6*** |  |  |  | ***−6*** |
| ***3*** |  |  |  | ***3*** |  |  |  | ***3*** |
| ***y*** |  |  |  | ***5*** |  |  |  | ***−7*** |

***(b)*** *Draw a graph of*  *for* ***−5 ≤ x ≤ 2 (****use a scale of* ***1cm:1******unit*** *on both axes* ***)***

***(c)*** *Use your graph to solve the equations****:***

***(i)***  ***(ii)***   ***(iii)*** 

***(iv)***  ***(v)*** 

***5. (a)*** *Copy and complete the table below for the function* 

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***x*** | ***−3*** | ***−2*** | ***−1*** | ***0*** | ***1*** | ***2*** | ***3*** | ***4*** |
| ***(x − 2)*** |  | ***−4*** |  | ***−4*** |  |  |  | ***2*** |
| ***(x + 1)*** |  | ***−1*** |  | ***6*** |  |  |  | ***5*** |
| ***y*** |  | ***4*** |  | ***3*** |  |  |  | ***10*** |

***(b)*** *Draw a graph of*  *for* ***−3 ≤ x ≤ 4 (****use a scale of* ***1cm:1******unit*** *on both axes* ***)***

***(c)*** *Use your graph to solve the equations****:***

***(i)***  ***(ii)*** 

***(iii)*** 

***(d)*** *State the****:***

***(i)*** *equation of the line of symmetry*

***(ii)*** *minimum value of the function*

***(iv)*** *range of values of* ***x*** *for which* 

***EER:***

***1.*** *Use the graphical method to solve the simultaneous equations*  *and*  *for* ***−3 ≤ x ≤ 3.***

***2. (a)*** *Draw a graph of*  *for* ***−3 ≤ x ≤ 3 (****use a scale of* ***1cm:1******unit*** *on both axes* ***)***

***(b)*** *Use your graph to solve the equations****:***

***(i)*** 

***(ii)*** 

***3. (a)*** *Copy and complete the table below for the function* 

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***X*** | ***−3*** | ***−2*** | ***−1*** | ***0*** | ***1*** | ***2*** | ***3*** | ***4*** |
|  |  | ***−4*** |  |  |  |  | ***−9*** |  |
|  |  | ***−2*** |  |  |  |  | ***3*** |  |
| ***2*** |  | ***2*** |  |  |  |  | ***2*** |  |
| ***Y*** |  | ***−4*** |  |  |  |  | ***−4*** |  |

***(b)*** *Draw a graph of*  *for* ***−3 ≤ x ≤ 4 (****use a scale of* ***1cm:1******unit*** *on both axes* ***)***

***(c)*** *Use your graph to solve the equations****:***

***(i)*** 

***(ii)*** 

***(iii)*** 

***4.*** *On the same axes****,*** *draw the graphs of*  *and*  *for* ***−2 ≤ x ≤ 3******(****use a scale of* ***2cm : 1 unit*** *on the* ***x-axis*** *and* ***1cm : 2 units*** *on the* ***y-axis)***

***(b)*** *Use your graphs to solve the equations****:***

***(i)*** 

***(ii)***  *correct to* ***2*** *decimal places*

***5. (a)*** *Copy and complete the table below for the function* 

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ***X*** | ***−1*** | ***0*** | ***1*** | ***2*** | ***3*** | ***4*** | ***5*** |
| ***(x − 1)*** |  | ***−1*** |  |  | ***2*** |  |  |
| ***(x − 3)*** |  | ***−3*** |  |  | ***0*** |  |  |
| ***Y*** |  | ***3*** |  |  | ***0*** |  |  |

***(b)*** *Draw a graph of*  *for* ***−1 ≤ x ≤ 5 (****use a scale of* ***1cm:1******unit*** *on both axes* ***)***

***(c)*** *Use your graph to solve the equations****:***

***(i)*** 

***(ii)*** 

***(d)*** *State the****:***

***(i)*** *minimum value of the function*

***(iv)*** *range of values of* ***x*** *for which* 

***6.******(a)*** *On the same axes****,*** *draw the graphs of*  *and*  *for* ***−4 ≤ x ≤ 1*** *using intervals of* ***0⋅5*** ***(****use a scale of* ***2cm : 1 unit*** *on the* ***x-axis*** *and* ***1cm : 1 unit*** *on the* ***y-axis)***

***(b)*** *Use your graphs to solve the equation*

***7. (a)*** *Copy and complete the table below****:***

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***X*** | ***−4*** | ***−3*** | ***−2*** | ***−1*** | ***0*** | ***1*** | ***2*** | ***3*** | ***4*** |
|  | ***14*** |  |  |  |  |  |  | ***7*** |  |
|  | ***−10*** |  |  |  |  |  |  | ***−3*** |  |

***(b)*** *On the same axes****,*** *draw the graphs of*  *and*  *for* ***−4 ≤ x ≤ 4. (****use a scale of* ***1cm : 1 unit*** *on the* ***x-axis*** *and* ***1cm : 2 units*** *on the* ***y-axis)***

***(c)*** *Use your graphs to solve the equation*

***8. (a)*** *Draw a graph of*  *for* ***−2 ≤ x ≤ 4 (****use a scale of* ***1cm:1******unit*** *on both axes* ***)***

***(c)*** *Use your graph to solve the equations****:***

***(i)*** 

***(ii)*** 

***(iii)*** 

***9. (a)*** *Copy and complete the table below for the function* 

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***X*** | ***−2*** | ***−1⋅5*** | ***−1*** | ***−0⋅5*** | ***0*** | ***0⋅5*** | ***1*** | ***1⋅5*** | ***2*** | ***2⋅5*** | ***3*** |
|  | ***−8*** |  | ***−2*** | ***−0⋅5*** |  |  | ***−2*** | ***−4⋅5*** | ***−8*** |  | ***−18*** |
|  | ***−6*** |  | ***−3*** | ***−1⋅5*** |  |  | ***3*** | ***4⋅5*** | ***6*** |  | ***9*** |
| ***6*** | ***6*** | ***6*** | ***6*** | ***6*** | ***6*** | ***6*** | ***6*** | ***6*** | ***6*** | ***6*** | ***6*** |
| ***Y*** | ***−8*** |  | ***1*** | ***4*** |  |  | ***7*** | ***6*** | ***4*** |  | ***−3*** |

***(b)*** *On the same axes****,*** *draw the graphs of*  *and*  *for* ***−2 ≤ x ≤ 3******(****use a scale of* ***2cm : 1 unit*** *on the* ***x-axis*** *and* ***1cm : 1 units*** *on the* ***y-axis)***

***(c)*** *Use your graphs to solve the equation*

***10. (a)*** *On the same axes****,*** *draw the graphs of*  *and*  *for* ***−3 ≤ x ≤ 4******(****use a scale of* ***1cm : 1 unit*** *on the* ***x-axis*** *and* ***1cm : 2 units*** *on the* ***y-axis)***

***(b)*** *Use your graphs to solve the equations****:***

***(i)*** 

***(ii)*** 