**FINDING EQUATIONS OF GRAPHS.**

Hints:

(a) See where graph crosses *x* axis. eg at 2 and 4 so basis is *y =****a*** *(x – 2)(x – 4)*

(b) See where graph crosses *y* axis to work out the value of ***a***



Crosses *x* axis at 2 and 4 so equ is of the form *y =****a*** *(x – 2)(x – 4).* Crosses *y* axis at 4 so subs *x = 0, y = 4* to find the constant ***a***.

*4 = a ( 0 – 2 )(0 – 4)*

*4 = 8a*

*a* = ½

Equation is *y =*½ *(x – 2)(x – 4)*

 *OR y = (x – 2)(x – 4)*

 *2*

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 Find the equations of the following curves:

1.
 

2.

N.B. when parabola goes through

the point (0, 0) use another point

such as the max point (3, 3)



3.



N.B. when parabola does not cross the *x* axis it is of the form ***y = a(x – b)2 + c***

From the graph, ***b*** and **c** should be obvious.

Work out c using (0, 3).

4.

Equ will be of the form :

***y = p x(x – a)(x – b)***

***a and b*** *should be obvious.*

To find ***p*** you need to subs a point such as (2,1) or min (6, -3)



5.



6.

Equ will be of the form :

***y =p x(x – a)2***

***a*** *should be obvious.*

To find ***p*** you need to subs a point such as (2,2) or max (1, 4)



7.



Equ will be of the form :

***y =p x(x – a)2***

***a*** *should be obvious.*

To find ***p*** you need to subs a point such as (1, 4)

8.

Equ will be of the form :

***y =p x2(x – a)2***

***a*** *should be obvious.*

To find ***p*** you need to subs a point such as max (2, 4)



9.

Equ will be of the form :

***y =p (x + a)(x + b)(x – c)(x – d)***

***a, b, c and d*** *should be obvious.*

To find ***p*** you need to subs a point such as (0, 3) or (2, -6)

N.B. Sometimes the graph **seems** to go through points such as (3, -1) but it does not.



11.

Equ will be of the form :

***y =p(x + a)2(x – b)2***

***a and b*** *should be obvious.*

To find ***p*** you need to subs a point such as max (0, 4)



12.



Equ will be of the form : ***y = b or xy = b***

 ***x***

Choose a point such as (2, 2) or (4, 1) to find ***b***

13.



14.



15.

Equ will be of the form : ***y = b x and such graphs go through (0, 1)***

Look for a point such as (1, 3) to find ***b***



16.

This does not go through (0, 1) so the equation is of the form y = ***a*** × ***b x***

Subs ***x = 0, y = 3*** to find ***a***  and then look for a point such as (1, 6) to find ***b***



17.

This “growth” or exponential curve does not approach zero so its equ must be of the form: ***y = bx + c***  clearly c = 1

Find a suitable point for substitution such as (1, 3) or (2, 5) to find ***b***



18.

Equ must be of the form: ***y = bx*** – ***c***  clearly ***y = bx – 2***

Find a suitable point to subs and find ***b***



19.



Equ must be of the form: ***y =*** –***bx + c***

20.



Find the equ in the form ***y = a×bx – c***

use the coordinates ( 0, 1) and (1, 7)