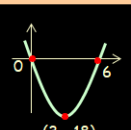
Outcome 1 – Quadratic functions of the form y = ax(x ± b)

Bronze example

Example...

The equation of the parabola shown is of the form y = ax(x + b).



What is the equation of this quadratic?

y = ax(x + b)

1. Fill in the roots

y = ax (x – 6)

-18 = 3a (-3)

2. Sub OTHER point in

-18 = -9a

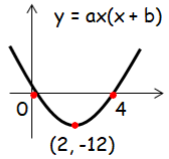
a = 2

y = 2x(x – 6)

Bronze questions

Determine the equations of the following quadratic functions...

1



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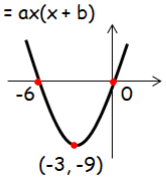

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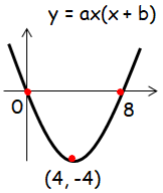

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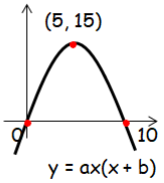
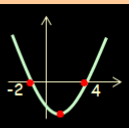


Outcome 2 – Quadratic functions in the form y = k(x ± a)(x ± b)

Silver example

Example...

The equation of the parabola shown is of the form y = k(x + a)(x + b).



What is the equation of this quadratic?

y = k(x + a)(x + b)

1. Fill in the roots

y = k (x + 2) (x – 4)

-27 = k (3)(-3)

2. Sub OTHER point in

-27 = -9k

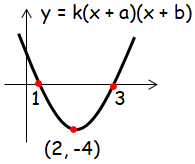
k = 3

y = 3(x + 2)(x – 4)

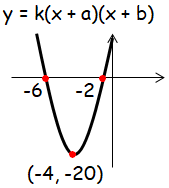
Silver questions

Determine the equations of the following quadratic functions...

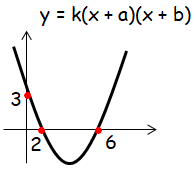
1



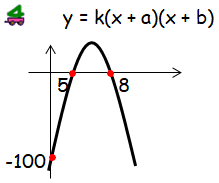
2



3



4

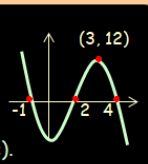


Outcome 3 – Cubic functions

Gold example

Examples...

The equation of the cubic shown is of the form y = k(x + a)(x + b)(x + c).



What is the equation of this cubic?

y = k(x + a)(x + b)(x + c)

1. Fill in the roots

y = k (x + 1)(x - 2)(x - 4)

12 = k (4) (1) (-1)

2. Sub OTHER point in

12 = -4k

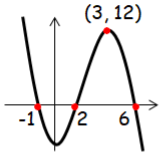
k = -3

y = -3(x + 1)(x – 2)(x – 4)

Gold questions

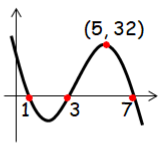
Determine the equations of the following cubic functions...

1

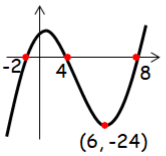


y = k(x + a)(x + b)(x + c)

2

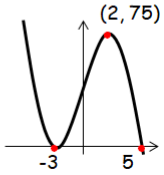


3



y = k(x + a)(x + b)(x + c)

4



y = k(x + a)(x + b)²

Bronze Answers

1. $y = 3x(x - 4)$
2. $y = x(x + 6)$
3. $y = 1/4x(x - 8)$
4. $y = -3/5x(x - 10)$

Silver Answers

1. $y = 4(x - 1)(x - 3)$
2. $y = 5(x + 6)(x + 2)$
3. $y = 1/4(x - 2)(x - 6)$
4. $y = -5/2(x - 5)(x - 8)$

Gold Answers

1. $y = -(x + 1)(x - 2)(x - 6)$
2. $y = -2(x - 1)(x - 3)(x - 7)$
3. $y = 3/4(x + 2)(x - 4)(x - 8)$
4. $y = -(x + 3)^2(x - 5)$