

YOU MAY USE A GRAPHING CALCULATOR FOR THE ENTIRE QUIZ!!!!

Provide clear and concise supporting evidence for your solutions. Your evidence should be either algebraic or graphic/visual, as is necessary and appropriate OR as is required. Incorrect answers without supporting evidence/working will NOT earn partial marks!!!

1. Expand the following quadratic expressions:

a. $5x(2x - 3)$

(2M)

b. $(x - 4)(x + 7)$

(2M)

c. $-2(x - 4)^2$

(3M)

d. $(2 - 5x)(3x - 8)$

(3M)

2. Factor the following quadratic expressions.

a. $x^2 - 9x - 36$

(2M)

b. $x^2 - 18x + 32$

(2M)

c. $x^2 - 49$

(2M)

d. $4x^2 + 5x - 6$

(3M)

3. Given your factoring work in Question 2, you can now determine where the zeroes (or x-intercepts) of each of the parabolas are located.

a. Where are the zeroes/x-intercepts of the parabola $x^2 - 9x - 36$?

(1M)

b. Where are the zeroes/x-intercepts of the parabola $x^2 - 18x + 32$?

(1M)

c. Where are the zeroes/x-intercepts of the parabola $x^2 - 49$?

(1M)

d. Where are the zeroes/x-intercepts of the parabola $4x^2 + 5x - 6$?

(2M)

4. Here is a graph of a quadratic relation. Answer the following analysis questions.

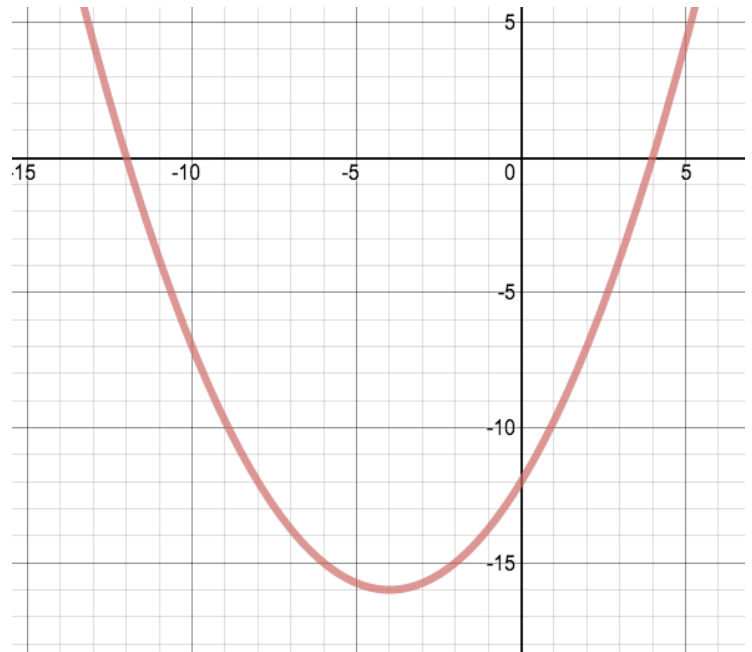
(11)

(a) State the coordinates of the zeroes of the parabola.

(b) State the coordinates of the y-intercept.

(c) State the equation of the axis of symmetry.

(d) State the optimum value.



(e) Determine the value(s) of x when $y = -3$.

(f) Determine the equation of the parabola (write equation in factored form)

5. The zeroes of a parabola are at $x = -2$ and $x = 8$ and the y-intercept is at 8.

- a. What is the equation of the axis of symmetry of this parabola? Show work OR explain how you determine the equation

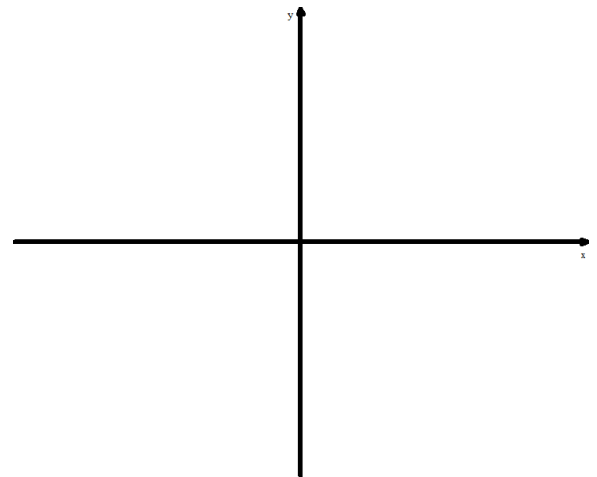
(2)

- d. Sketch the parabola here, labelling the zeroes, the y-intercept and the axis of symmetry and the vertex.

(3)

- b. Determine the equation of this quadratic relation. Show work OR explain how you determine the equation.

(4)



- c. Determine the co-ordinates of the vertex. Show work OR explain how you determined the vertex.

(2)

6. A company called SAMSOONG introduces a new cellphone (called the MATH Quad X PHONE) and its PROFITS are modelled by the equation $P = -5m^2 + 80m - 100$, where m is time in months (we will use $m = 0$ to represent January 1st) and P is the profit in millions of dollars (so that the ordered pair (10,200) means that in the month of November, the profit was \$200,000,000). The cellphone is sold for a period of 2 years.

- a. Graph the profit function on your TI-84. What window settings did you use?

Xmin =

Ymin =

(2)

Xmax =

Ymax =

(2)

- b. Calculate the zeroes of the quadratic and interpret what they mean.

- c. Calculate the co-ordinates of the vertex and interpret what it means.

(2)

- d. Evaluate P when $m = 5$ and interpret what your answer means in the context of this problem.

(2)

- e. Solve for m when $P = -25$ and interpret what your answer means in the context of this problem.

(2)

- f. The Chief Financial Officer needs to decide when SAMSOONG should STOP making and selling this model (MATH Quad X PHONE). When should they stop? Explain your reasoning/thinking in this decision.

(2)