

TEST # 4

NAME: _____

KU	/17	APP	/14	TIPS	/4	COMM	/5
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Knowledge/Understanding

1. Write the function $f(x) = 2(x - 3)^2 + 4$ in standard form. (2 marks)

2. Write in vertex form by completing the square.(2 marks + 3 marks = 5 marks)

a) $f(x) = x^2 - 6x + 10$

b) $f(x) = -2x^2 + 10x - 4$

3. Solve using the quadratic formula. (2 marks + 3 marks = 5 marks)

a) $2x^2 - 5x + 8 = 0$

b) $2(x - 3)^2 = 6$

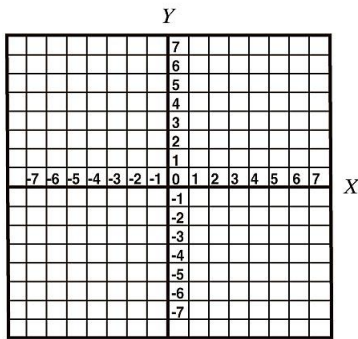
4. Use the discriminate to determine the number of real solutions of each quadratic equation.(2 marks + 3 marks = 5 marks)

a) $2x^2 - x + 5 = 0$

b) $4x^2 - 8x = 4x - 9$

Application:

5. For the given the function $f(x) = -2(x - 3)^2 + 5$, state
- a) The vertex (1 mark) _____
 - b) The equation of axis of symmetry (1 mark) _____
 - c) Is it a maximum or minimum value (1 mark) _____
 - d) The maximum or minimum value (1 marks) _____
 - e) Sketch the graph. (3 marks)



Application:

6. The height above a bungee jumper is modelled by the quadratic function $h(t) = -5(t - 0.3)^2 + 110$, where height, $h(t)$, is in metres and time, t , is in seconds.
- a) When does the jumper reach maximum height? (1 mark)
 - b) What is the maximum height reached by the jumper? (1 mark)
 - c) Determine the height of the platform from which the bungee jumper jumps. (2 marks)
7. Write the quadratic equation in vertex form for the given graph. (3 marks)

8. A theatre company's profit, $P(x)$, on a production is modeled by $P(x) = -60x^2 + 1800x + 16500$, where x is the cost of a ticket in dollars. According to the model, what should the company charge per ticket to make the maximum profit? (3 marks)

TIPS

9. A model rocket is launched into the air. Its height, $h(t)$, in metres after t seconds is $h(t) = -5t^2 + 40t + 2$.

a) When does the rocket hit the ground? (2 marks)

b) How much time is the rocket above 62 metres? (2 marks)

COMMUNICATION:

10. Without drawing the graph or using the discriminate, explain in words how to determine if the function $f(x) = -5(x + 3)^2 - 10$ intersect the x -axis at one point, two points or not at all. (2 marks)

11. Which form of a quadratic function do you like using? Explain! List two other forms of quadratic functions. (3 marks)