

Aim: How can rewrite quadratic expressions in standard form, ax^2+bx+c ($a \neq 1$) in equivalent completed square form, $a(x-h)^2+K$ and its practical applications? (this lesson includes topic #10 – see Syllabus)

Do Now:

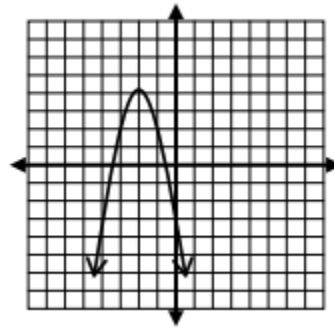
1) Which multiple choice could be the equation of the graph shown?

A. $y = -2(x + 2)^2 + 4$

B. $y = -2(x - 2)^2 + 4$

C. $y = -2(x + 2)^2 - 4$

D. $y = -2(x - 2)^2 - 4$

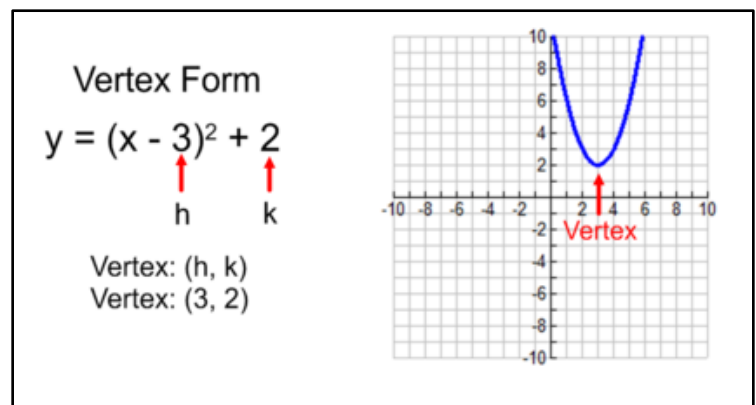


2) Graph: $y = -2(x + 1)^2 - 3$

I – How to write the equation of parabola given its vertex and one more point?

1) Vertex (3,6) and point P (7,2)

Example:



2) Vertex (-1,12) and point P (2,-15)

3) Vertex (-1,4) and point P (2,-2)

4) Vertex (0,0) and point P (-1,2)

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II- Applications

- 1) Bruce is kicking a field goal from 30 m away at a goal post 3 m tall. The ball reaches a maximum height of 20 m after 18 seconds. Also, the ball is 12 m high after 10 seconds of being in the air.
- 2) Chippy, the beaver is diving into the water to her dam. She enters the water 1s after jumping and gets to the dam after 5 s. How high is the ledge if she reaches a maximum depth of 6 m below the water?
- 3) The profit, P , a company makes depends on the ticket price, t , they charge. $P = -15t^2 + 600t + 50$
 - a) What ticket price yields the maximum profit? b) What is the maximum profit?

Homework 9

Convert the following quadratics equations from standard form into vertex form.

1. $y = x^2 + 2x + 1$

2. $y = x^2 - 6x + 3$

3. $f(x) = -x^2 - 4x + 5$

4. $g(x) = 3x^2 - 6x + 4$

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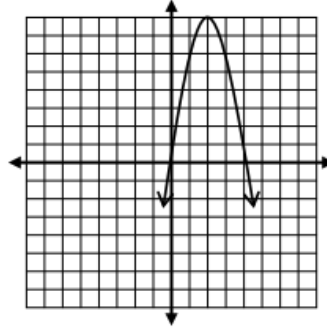
5) Which multiple choice could be the equation of the graph shown?

A. $y = -2(x + 2)^2 + 8$

B. $y = -2(x - 2)^2 + 8$

C. $y = -2(x + 2)^2 - 8$

D. $y = -2(x - 2)^2 - 8$



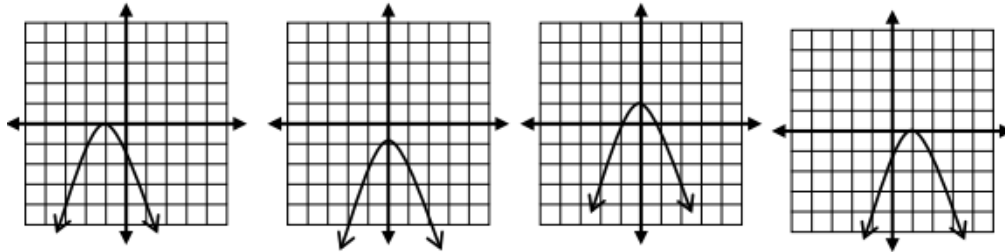
6) Which multiple choice could be the graph of $y = -x^2 - 1$?

A.

B.

C.

D.



7) The revenue, R , made selling phones at price, p , can be modeled by

$$R = \frac{-5}{2} p^2 + 500p$$

a) What price will maximize the companies revenue?

b) What is the maximum revenue?

8) Determine the equation of the parabola with vertex V and passing through a point.
 $V(2,0)$ and $P(1,4)$

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9) Chippy, the beaver is diving into the water to her dam. She enters the water 2s after jumping and gets to the dam after 6 s. How high is the ledge if she reaches a maximum depth of 7 m below the water?

10) Bruce is kicking a field goal from 40 m away at a goal post 4 m tall. The ball reaches a maximum height of 24 m after 16 seconds. Also, the ball is 22 m high after 8 seconds of being in the air. Does he score?

Answers to Homework # 9

Please select the correct answers number for each question. There are more answers than questions. Answer may be repeated.

- 1) No
- 2) Yes
- 3) (A)
- 4) (B)
- 5) (C)
- 6) (D)
- 7) 21
- 8) 100 and 25000
- 9) $Y = (X+1)^2$
- 10) $Y = 4(X-2)^2$
- 11) $Y = 3(X-1)^2 + 1$
- 12) $Y = -(X+2)^2 + 9$
- 13) $Y = (X-3)^2 - 6$