

Weekly Warm Up:

UNIT 1B REVIEW SHEET

Note: This is your Review Sheet/Practice for the Unit 1B exam. Make sure you are doing other practice problems too!

Monday:

- Find the axis of symmetry for the graph of  $y = 6x^2 + 12x + 13$

$x = -1$

- Write an equation for a parabola going through the x-axis at 5 and with a vertex of (2, 13)

$x = 5$   $x = -1$

$y = -1.4x^2 + 5.7x + 7.2$       (5,0) (-1,0) (2,13)

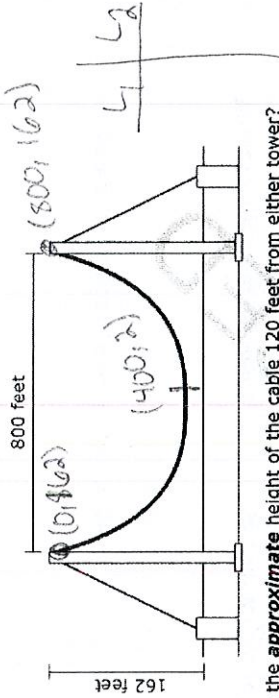
- Write in standard form:  $y = -2(x + 1)^2 - 6$

$(x - 5)(x + 1) = 0$

$y = -2x^2 - 4x - 8$

$x^2 - 4x - 5$   
 $13 = (2)^2 = 4(2) - 5$

The towers of a suspension bridge are 800 feet apart and rise 162 feet higher than the road. Suppose that the cable between the towers has the shape of a parabola and is 2 feet higher than the road at the point halfway between the towers.



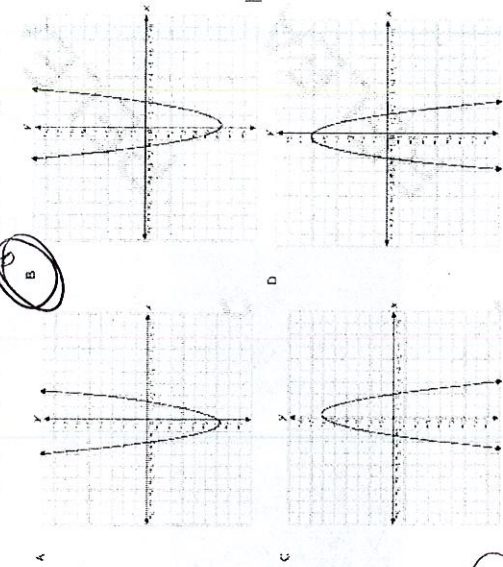
What is the approximate height of the cable 120 feet from either tower?

- A 80 feet
- B 74 feet
- C 22 feet
- D 16 feet



Monday HOMEWORK:

Which graph displays the function  $f(x) = (2x + 3)(x - 2)$ ?



- Find the y-intercept of the equation  $y = 3x^2 - (4x - 8)$       8

- Suppose you are tossing an apple up to a friend on a third-story balcony with a velocity of 38.4 seconds and a starting height of .96 feet. Your friend catches the apple just as it reaches its highest point. How long does the apple take to reach your friend, **and** at what height above the ground does your friend catch it? (SPECIFY EACH)      1.2 sec @ 24 ft

- Given:  $y = 5x^2 + 4x - 12$ , what are the roots?

$(-2, 0)$  ;  $(1.2, 0)$

- Write an equation of a line with a maximum of 12 that goes through the points (3, 0) and (7, 0)       $(5, 12)$

$y = -3x^2 + 30x - 63$

Tuesday:

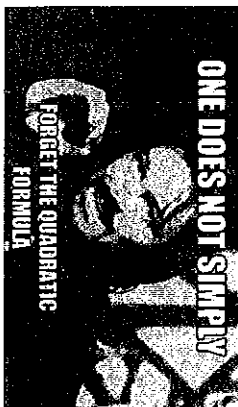
1. :

The heights of two different projectiles after they are launched are modeled by  $f(x)$  and  $g(x)$ . The function  $f(x)$  is defined as  $f(x) = -16x^2 + 42x + 12$ . The table contains the values for the quadratic function  $g$ .

| x | g(x) |
|---|------|
| 0 | 9    |
| 1 | 33   |
| 2 | 25   |

What is the **approximate** difference in the maximum heights achieved by the two projectiles?

- A 0.2 feet
- B 3.0 feet
- C 5.4 feet
- D 5.6 feet



2. Write the following in vertex form:

$y = -3x^2 - 12x - 6$

$-3x^2 - 12x - 6 = 6 + \dots$   
 $-3(x^2 + 4x + \frac{16}{3}) = 6 + -3(\frac{16}{3})$   
 $-3(x+2)^2 = -6$   
 $\rightarrow y = -3(x+2)^2 + 6$

3. A toy rocket is shot upward from the ground level. The expression  $h(t) = -16t^2 + 30t + 60$  describes the height in feet. Describe the meaning of the vertex

MAX: 94 sec @ 74 ft

4. Since the year 2000, there has been a tremendous increase in the online sales of pet food, pet medications, and other pet supplies. That data shown in the table shows the amount spent (in billions of dollars) for the years indicated.

| Year (2001 is to 1) | 1   | 5   | 6   | 7   | 8   |
|---------------------|-----|-----|-----|-----|-----|
| Sales (billions \$) | 0.8 | 4.1 | 5.6 | 7.4 | 9.1 |

Determine the regression equation that best fits this data and then find the amount of online sales projected for the year 2013.

$y = .12x^2 + .14x + .54$

$x = 13 \rightarrow \$22.25 \text{ Bill.}$

Wednesday:

1. In which quadrant(s) is the solution(s) to the system?

$-y - 6x = -x^2 + 1$  and  $y + 2x = 6$ .

II, C, IV  
 (-1, 8) (5, -4)

2. The revenue for a production by a theatre group is  $50t^2 = 300t - y$ , where  $t$  is the ticket price in dollars. The cost for the production is  $y + 50t = 600$ . Determine the ticket price that will allow the production to break even (ie: equal each other).

\$3 or \$4



3.

The sum of two numbers is 24. The sum of the squares of the two numbers is 306. What is the product of the two numbers?

- A 119
- B 128
- C 135
- D 144

$15 + 9 = 24$   
 $15x9 = 135$   
 $x + y = 24$   
 $x^2 + y^2 = 306$

A system of equations is shown below.

$y = x^2 + 2x + 8$

$y = -4x$

$x^2 + 576 - 48x + x^2 = 306$   
 $2x^2 - 48x + 270 = 0$

What is the smallest value of  $y$  in the solution set of the system?

- A -4
- B -2
- C 8
- D 16

$(-4, 16)$  C  $(-2, 8)$   
 $48 \pm \sqrt{(48)^2 - 4(2)(270)}$   
 $= 48 \pm \sqrt{144}$   
 $\frac{48+12}{4} = 15$   
 $\frac{48-12}{4} = 9$

THURSDAY: TEST DAY! + Turn in Portfolio!!