

+ Warm Up

1) Given $f(x) = x^2 - 7x + 6$, state the following:

1) Vertex: $\left(\frac{7}{4}, -\frac{81}{16}\right)$

2) AOS: $x = \frac{7}{2(2)} = \frac{7}{4}$ $x = \frac{7}{4}$ } Plug in

3) Max or Min Value: \cup

4) Y-Intercept: $x = 0$ $(0, 6)$

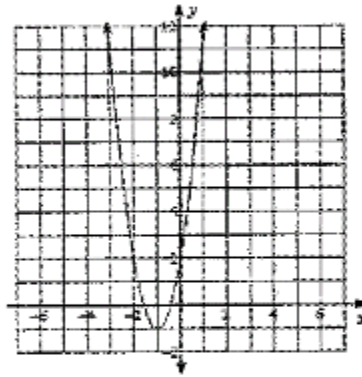
5) X-Intercepts: $y = 0$ $(x - 6)(x - 1)$
 $(6, 0)$ $(1, 0)$



Homework Answers 1-4

I. For each graph fill in the blanks for the requested information.

a) $y = 3x^2 + 6x + 2$



Vertex: $(-1, -1)$

Zeros: $(-1.58, 0)$ + $(-0.423, 0)$

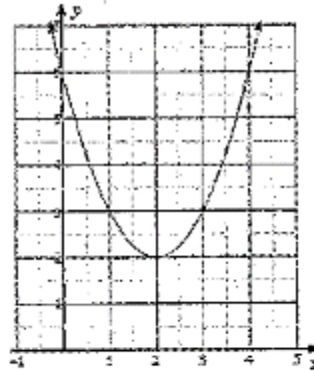
y-intercept: $(0, 2)$

Axis of symmetry: $x = -1$

Decreasing interval: $x < -1$

Increasing interval: $x > -1$

b) $y = x^2 - 4x + 6$



Vertex: $(2, 2)$

Zeros: No real zeros

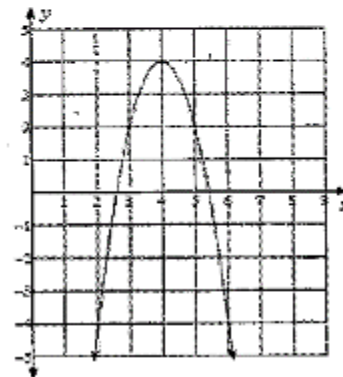
y-intercept: $(0, 6)$

Axis of symmetry: $x = 2$

Decreasing interval: $x < 2$

Increasing interval: $x > 2$

c) $y = -2x^2 + 16x - 28$



Vertex: $(4, 4)$

Zeros: $(5.41, 0)$ + $(2.59, 0)$

y-intercept: $(0, -28)$

Axis of symmetry: $x = 4$

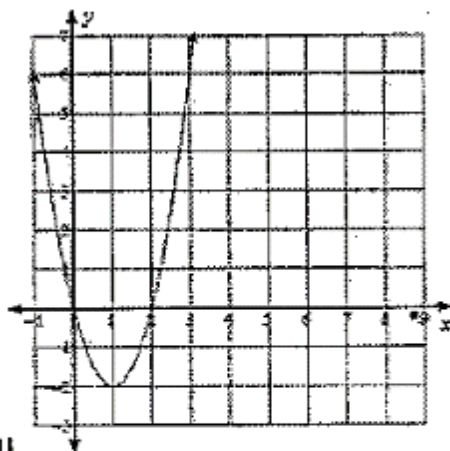
Decreasing interval: $x > 4$

Increasing interval: $x < 4$

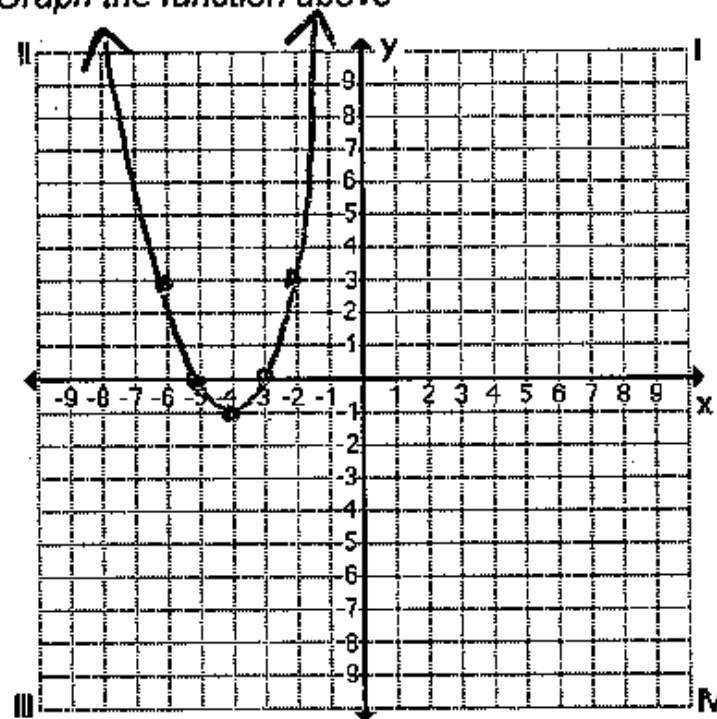
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d)

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

Vertex: (1, -2)Zeroes: (0, 0) + (2, 0)y-intercept: (0, 0)Axis of symmetry: x = 1Decreasing interval: x < 1Increasing interval: x > 1

Graph the function above



ii.

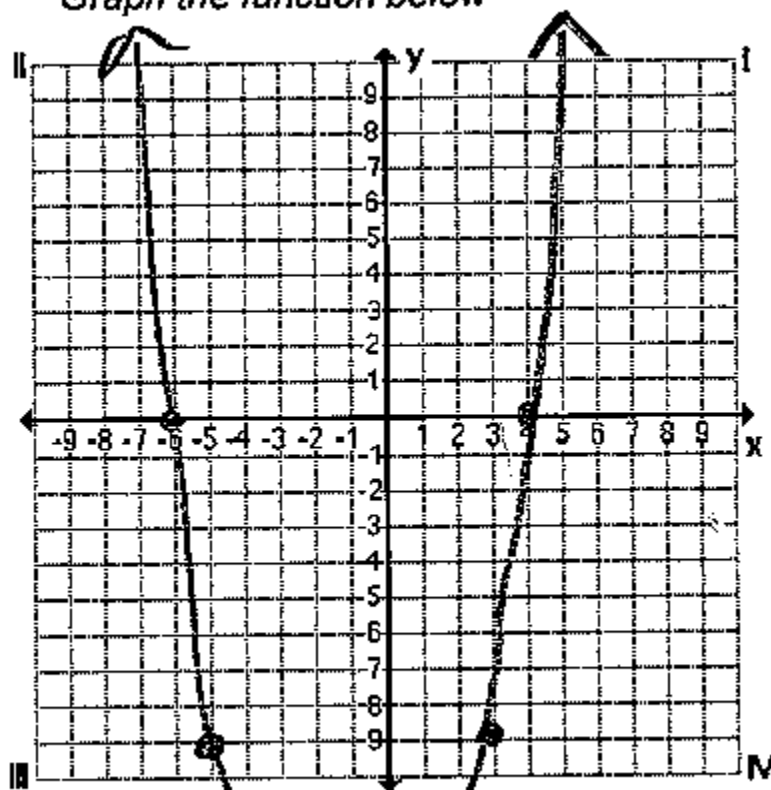
Equation	Axis of Symmetry	Vertex	Factor	x-intercept	y-intercept
$y = x^2 + 8x + 15$	$-\frac{b}{2a} = -\frac{8}{2(1)} = -\frac{8}{2}$ $x = -4$	$(-4)^2 + 8(-4) + 15 = -1$ $(-4, -1)$	$(x+5)(x+3)$	$(-3, 0)$ $(-5, 0)$	$(0, 15)$

Homework Answers 1-4

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Homework Answers 4-1

Graph the function below



Equation

Axis of Symmetry

Vertex

Factor

x-intercept

y-intercept

$$y = x^2 + 2x - 24$$

$$\frac{-b}{2a} = \frac{-2}{2(1)}$$

$$= \frac{-2}{2}$$

$$x = -1$$

$$(-1)^2 + 2(-1) - 24$$

$$(-1, -25)$$

$$(x+6)(x-4)$$

$$(-6, 0)$$

$$(4, 0)$$

$$(0, -24)$$

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■ For the equation $y = x^2 - 4x + 3$ find the:

■ 1. solution ^{$y=0$}

$$0 = (x-3)(x-1)$$

$x=3$ $x=1$

2. x-intercepts

$(3,0)$ $(1,0)$

3. y-intercept ^{$x=0$}

$(0,3)$

■ 4. AOS

$$x = \frac{-(-4)}{2(1)} = 2$$

$x=2$

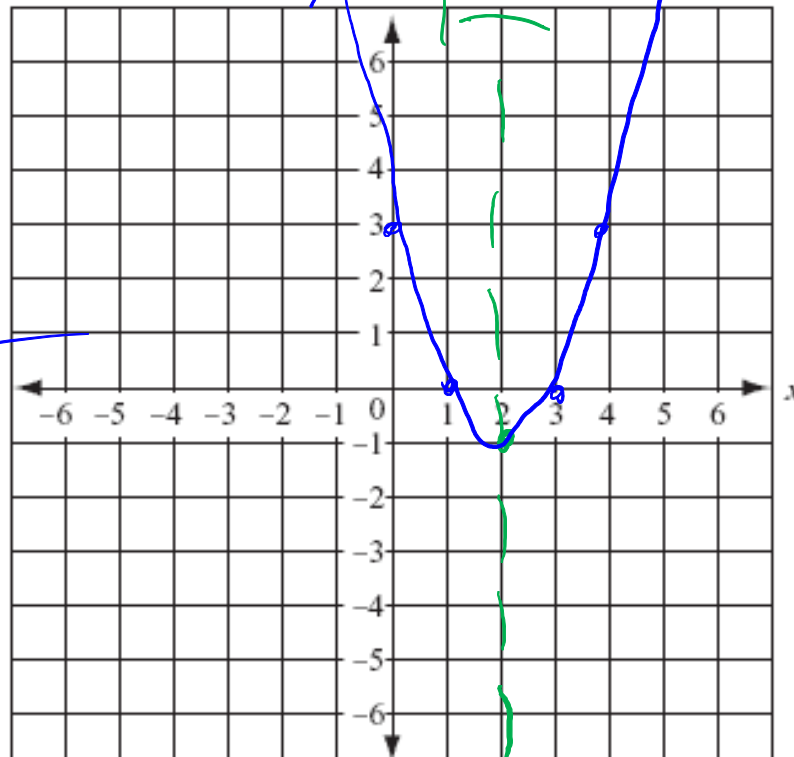
5. vertex $(2,-1)$

6. max/min

$y=-1$

■ 7. Graph:

x	y
0	3
1	0
2	-1
3	0
4	3



Increasing Interval:

$(2, \infty)$

Decreasing Interval:

$-\infty$

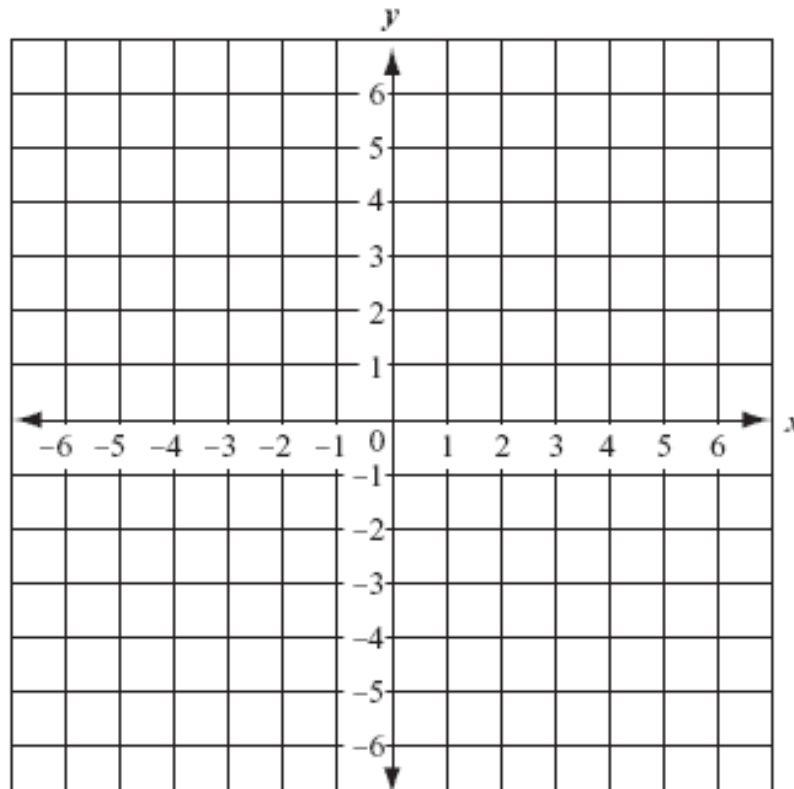
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■ For the equation $y > x^2 - 4x + 3$ find the:

■ 1. solution 2. x-intercepts 3. y-intercept

■ 4. AOS 5. vertex 6. max/min

■ 7. Graph:



Increasing Interval:

Decreasing Interval:

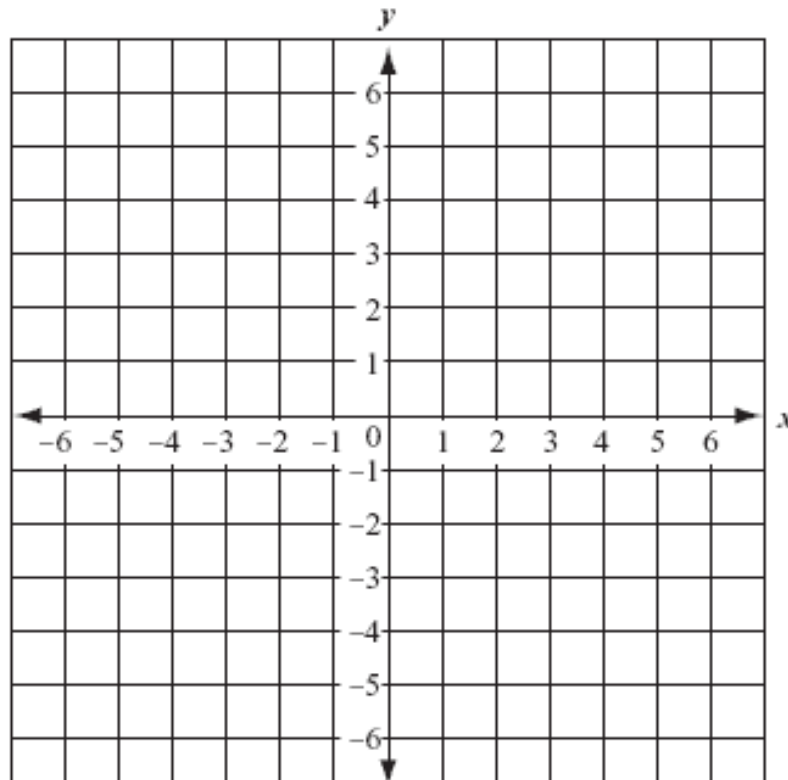
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■ For the equation $y = 4x^2 - 9$ find the:

■ 1. solution 2. x-intercepts 3. y-intercept

■ 4. AOS 5. vertex 6. max/min

■ 7. Graph:



Increasing Interval:

Decreasing Interval:

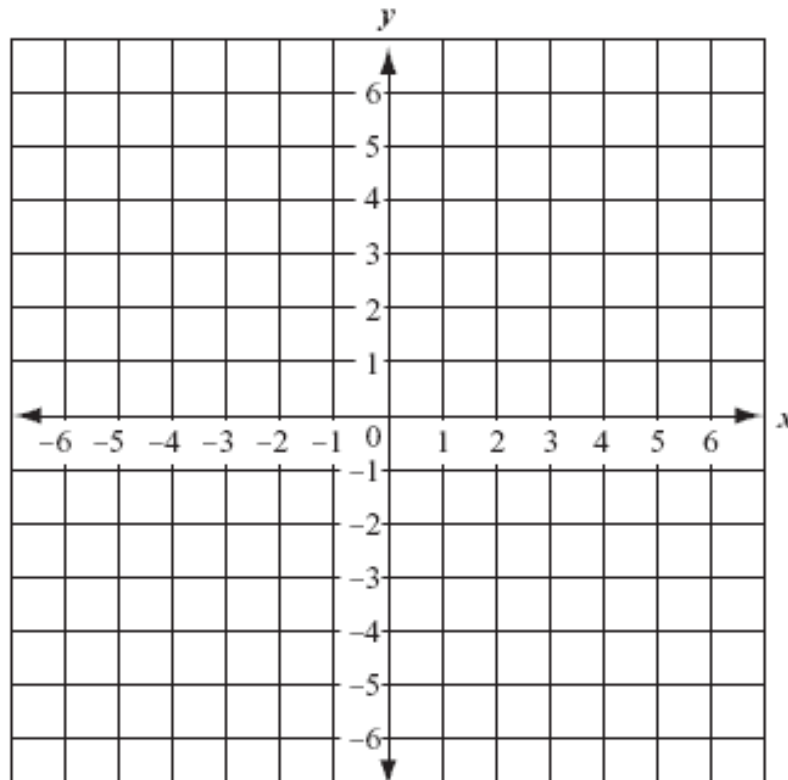
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■ For the equation $y \leq 4x^2 - 9$ find the:

■ 1. solution 2. x-intercepts 3. y-intercept

■ 4. AOS 5. vertex 6. max/min

■ 7. Graph:



Increasing Interval:

Decreasing Interval:



1) A bottlenose dolphin jumps out of the water. The path the dolphin travels can be modeled by

$h = -0.2d^2 + 2d$, where h represents the height of the dolphin and d represents the horizontal distance.

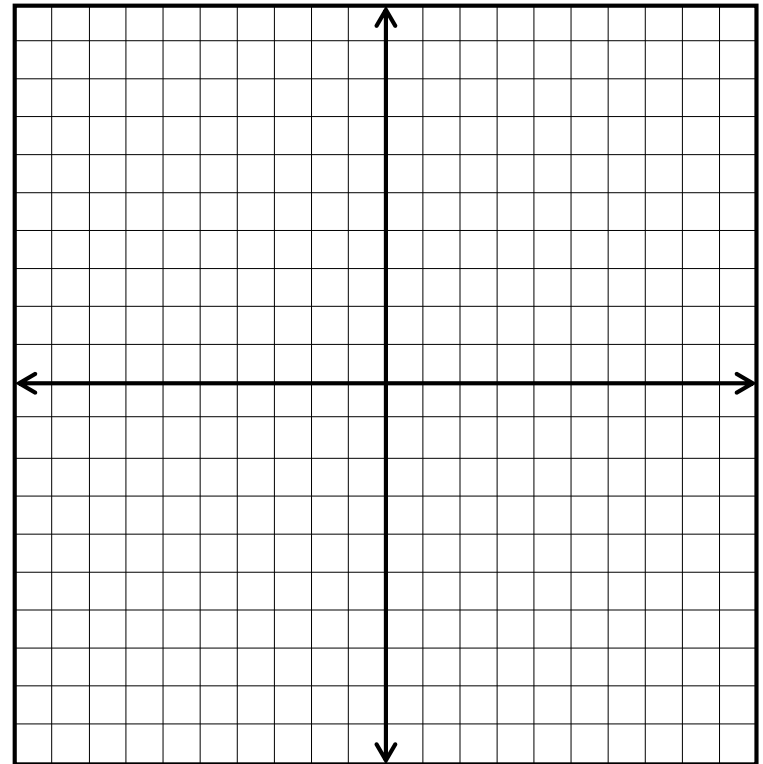
a) What is the maximum height the dolphin reached?

b) How far did the dolphin jump?



7. The amount of money that a freshman class fundraiser can raise can be modeled by the inequality $y \leq -2x^2 + 16x - 24$, where x represents the number of days into the sale and y represents the amount of money raised in hundreds.

- Graph the inequality.
- What is the maximum and what does it represent?
- When will the fundraiser start to raise money?
- How many days should the fundraiser last? Defend your answer.
- On which days will the sale make more than \$400?





2) Jaime owns a business making decorative boxes to store jewelry, mementos, and other valuables. The function $P(x) = -x^2 + 50x + 1800$ models the profit $P(x)$ that Jaime has made in month x for the first two years of her business.

a) What was the initial start up cost of her business?

b) During what month did Jamie make the most money?

c) What was the most Jamie made?





3) A Field Hockey player makes a scoop that releases the ball with an upward velocity of 34 ft/s. The function $h = -16t^2 + 34t$ models the height h in feet of the ball at time t in seconds.

a) Does the ball ever reach 20 feet?

b) How high does the ball travel?

c) How high is the ball at 2 seconds? At 3 seconds?

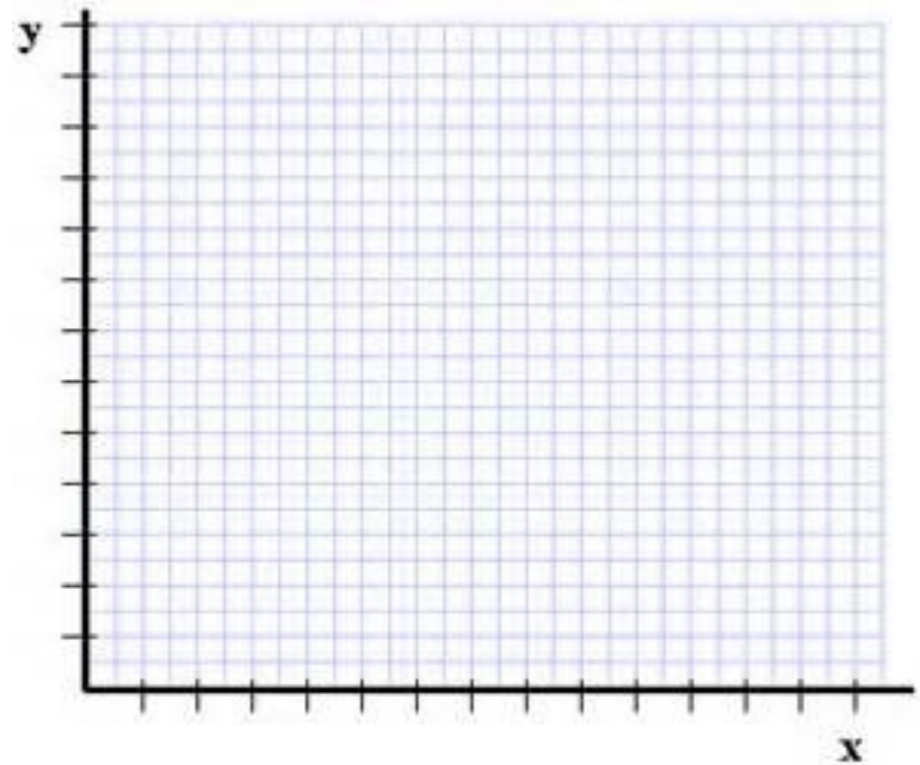
d) When will the ball reach the ground?



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8. The profits of Julie's new company can be modeled by the equation $y \leq -x^2 + 8x$, where x is the number of months and y is the profit in thousands of dollars.

- Graph the inequality.
- What is the maximum? What does it represent?
- How long is Julie's company profitable?
- Julie wants to know when her company made \$12,000 or more.
- Write the inequality that represents this situation and graph.



+ Homework

HW4-2 #1,2

HW4-3 #1-7 Odd

Study for
Tuesday's quiz!!

Tutorials: Before school and Wednesday
after school until 3:00 pm