

HW QUIZ Review key will be in this notes file online for tonight

Graphs

Left:

A. $y = -\frac{1}{3}x + 4$

B. $y = x - 2$ (iffy - sorry)

Center:

A. $y = \frac{3}{2}x + 5$

B. $y = -3x + 2$

Right:

A. $y = 4$

B. $x = 4$

1. $2x - 5y + 5 = 0$

2. $31x + 10y + 32 = 0$

3. $x + y + \cancel{4}^2 = 0$

4. $x - 2y + 11$

5. $x - 8y - \cancel{2}^{+4} = 0$

6. $4x + 3y + 13 = 0$

7. $4x - 5y + 29 = 0$

8. $2x - y - 10 = 0$

Homework Answers

Worksheet 1A

Read through the
beginning of your
notes

You need a

textbook today!

Friday 9/14 Quiz
Tues, 9/17 GrHW1 Due & Quiz
Wed 9/18 Parent Open House 6-8pm

Aug 22-8:53 AM

8) $\perp$ bisector (8,1) (4,3)

$$m = \frac{\Delta y}{\Delta x} = \frac{3-1}{4-8} = \frac{2}{-4} = -\frac{1}{2}$$

$\perp m = 2$

midpt = $(\frac{8+4}{2}, \frac{1+3}{2}) = (6, 2)$

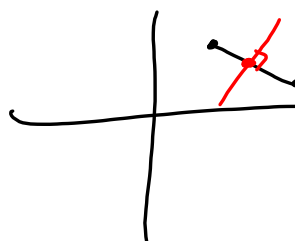
$$y - 2 = 2(x - 6)$$

$$y - 2 = 2x - 12$$

$$y = 2x - 10$$

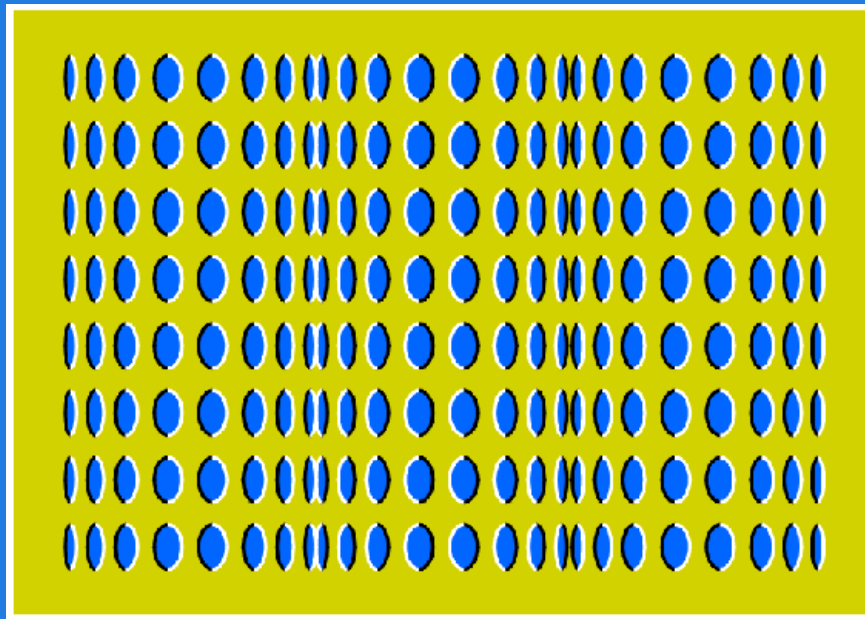
$$Ax + By + C = 0$$

$$\boxed{2x - y - 10 = 0}$$



$$-2x + y + 10 = 0$$

Behavior of Functions



You will need a book for the notes today

Sep 8-4:23 PM

Increasing → a function f is increasing on an interval if, for any 2 points in the interval, a positive change in x results in a positive change for $f(x)$

Decreasing → a function f is decreasing on an interval if, for any 2 points in the interval, a positive change in x results in a negative change for $f(x)$

Constant → a function f is constant on an interval if, for any 2 points in the interval, a positive change in x results in a zero change in $f(x)$

Relative Maximum → of function f is a value $f(c)$ that is $\geq$ all range values of f on some interval containing c .

Relative Minimum → of function f is a value $f(c)$ that is $\leq$ all range values of f on some interval containing c .

Aug 12-2:13 PM

1

In text, pg 130: 1 – 5 odds

a. increasing	b. decreasing	c. constant
1. $(-5, 1)$	$(3, 5)$	$(1, 3)$
3. $(3, -1)$ $(3, 5)$	$(1, 3)$	$(-5, -3)$
5. $(-\infty, -8)$ $(-3, -2)$	$(-8, -6)$	$(-6, -3)$ $(-2, \infty)$

Sep 8-7:34 PM

Sketch the following. Determine where increasing, decreasing, constant. Find any relative max or min.

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

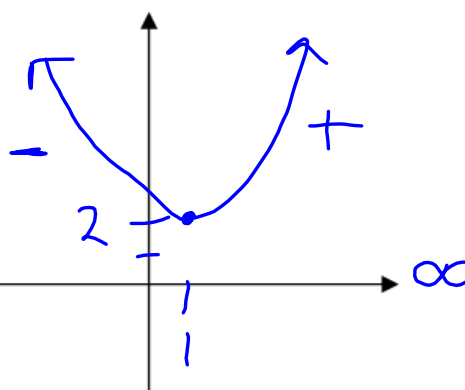
Rel Min: 2 at $x=1$

Rel Max: none

Decreasing: $(-\infty, 1)$

Increasing: $(1, \infty)$

Constant: none



Sep 9-7:32 AM

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

Rel Min: -2.83 at $x = 1.41$

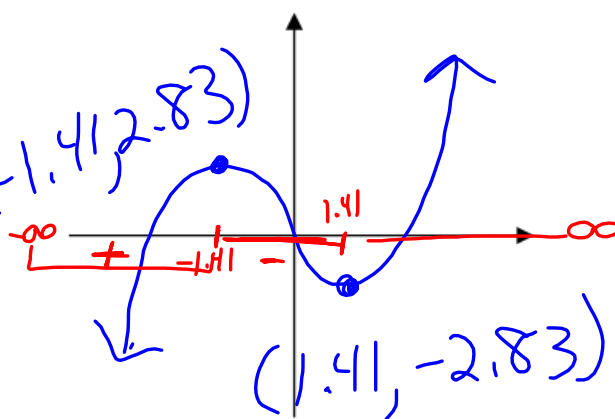
Rel Max: 2.83 at $x = -1.41$

Decreasing: $(-1.41, 1.41)$

Increasing: $(-\infty, -1.41)$

Constant: $(1.41, \infty)$

none



Sep 9-7:31 AM

3. $f(x) = |x| + |x + 2|$

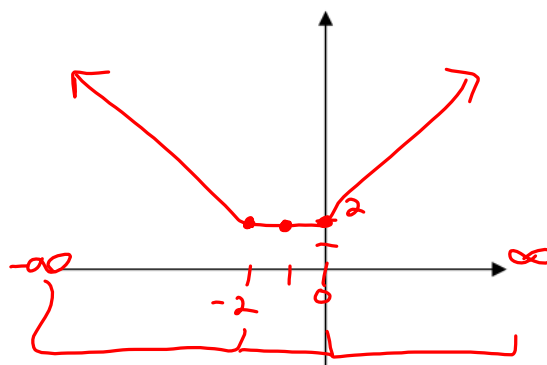
Rel Min: 2 at $x = -1$

Rel Max: none

Decreasing: $(-\infty, -2)$

Increasing: $(0, \infty)$

Constant: $(-2, 0)$



Sep 9-7:31 AM

4. Some fireworks are fired vertically into the air from the ground at an initial velocity of 80 feet per second. The height of the fireworks, $H(x)$, can be modeled by the equation: $H(x) = -16x^2 + 80x$, where x is the time in seconds after the fireworks were launched.

Use your graphing calculator to find the highest point reached by the projectile as it explodes.

Window:

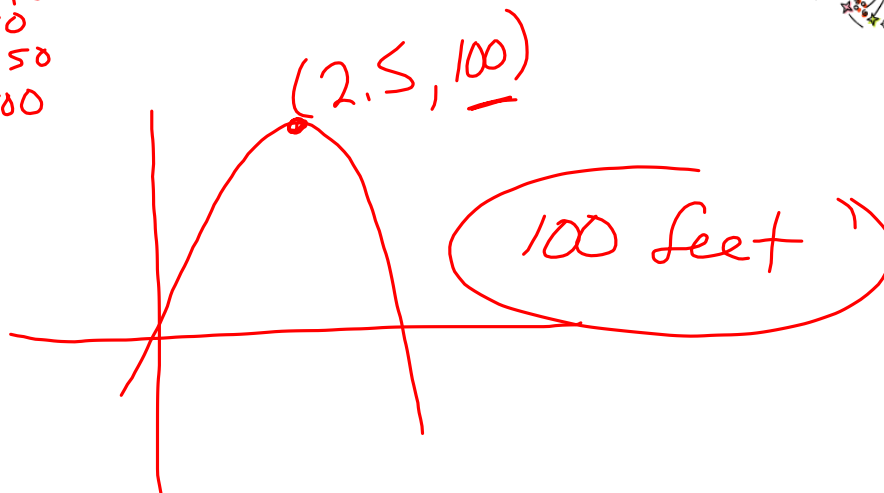
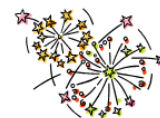
Xmin -10

Xmax 10

Ymin -50

Ymax 100

2nd trace max



Sep 9-7:31 AM

From your text, pg 131: 27

The temperature of a patient during an illness is given by the function: $T(t) = -0.1t^2 + 1.2t + 98.6$, where $t: [0, 12]$, T is the temperature, in degrees Fahrenheit, at time t , in days after the onset of the illness.

a. Graph the function.

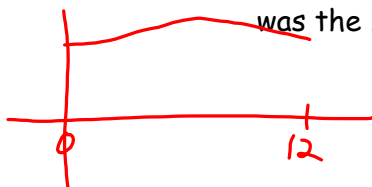
Window

Xmin 0

Xmax 12

Ymin 0

Ymax 120



b. Use the MAXIMUM feature to

determine at what time the patient's

temperature was the highest. What

was the highest temperature?

2nd trace max

$x = 6$

$y = 102.2$

$\therefore$ 6 days after illness, the patient's temp is highest at 102.2°F

Sep 12-4:17 PM

Review for Quiz

Answers

Sep 15-10:39 AM

1. Given the points A(-4, 5) and B(1, -5) find the midpoint.

$$\text{midpt} = \left(\frac{-4+1}{2}, \frac{5-5}{2} \right) = \left(-\frac{3}{2}, 0 \right)$$

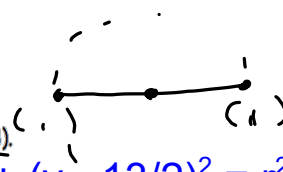
2. Write the equation of a circle with a diameter that passes through the points (4, 5) and (-2, 8).

$$\text{midpoint} = (1, 13/2) = (h, k) \quad (x - 1)^2 + (y - 13/2)^2 = r^2$$

$$(x - 1)^2 + (y - 13/2)^2 = 45/4 \quad (4 - 1)^2 + (5 - 13/2)^2 = r^2$$

$$9 + 9/4 = r^2$$

$$r^2 = 45/4$$



Sep 15-10:08 AM

3. Write the equation of a circle with center $(-5, 3)$ and radius $(3\sqrt{2})^2 = 18$

$$(x+5)^2 + (y-3)^2 = 18$$

4. Write the equation of a line in slope-intercept and standard form that passes through the point $(-3, 5)$ and is parallel to the line $2x - 3y - 7 = 0$.

$$m = \frac{2}{3} \quad 3y = 2x - 7$$

$$y - 5 = \frac{2}{3}(x + 3) \quad y = \frac{2}{3}x - 7$$

$$3y - 15 = 2x + 6$$

$$\text{standard: } 2x - 3y + 21 = 0$$

$$\text{slope-int: } y = \frac{2}{3}x + 7$$

Sep 15-10:08 AM

5. Write the equation of a line in slope-intercept and point-slope form that passes through the points $(3, 1)$ and $(-5, -8)$.

$$m = \frac{-8 - 1}{-5 - 3} = \frac{9}{8}$$

$$y - 1 = \frac{9}{8}(x - 3) \quad \text{or} \quad y + 8 = \frac{9}{8}(x + 5)$$

$$8y - 8 = 9x - 27 \rightarrow y = \frac{9}{8}x - \frac{19}{8}$$

6. Write an equation of a line perpendicular to the line $2y = 4x - 10$ that passes through the point $(-4, 5)$.

no form asked Go easy $\hookrightarrow y = 2x - 5$

$$y - 5 = -\frac{1}{2}(x + 4) \quad \perp m = -\frac{1}{2}$$

$$x + 2y - 6 = 0$$

$$y = -\frac{1}{2}x + 3$$

Sep 15-10:09 AM

7. State the domain and range of the function, g : $\{(-3, 1), (2, -5), (-1, -1), (3, 1)\}$

Domain: $\{-3, 2, -1, 3\}$ Range: $\{1, -5, -1\}$

How do you determine from a given set of points whether or not the relation is a function?
If each x-value maps to exactly one y-value it's a function.

Sep 18-7:16 AM

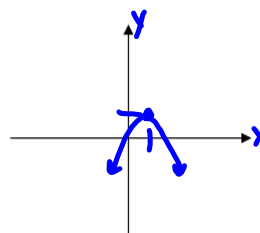
- 8 - 10: Sketch the function. Find the domain and range. If there are domain restrictions, show algebraically.

8. $y = -x^2 + 2x$ **No trouble!**

Domain: $\{x | x \in \mathbb{R}\}$

Range: $\{y | y \leq 1\}$

Sketch:



Sep 15-10:09 AM

9. $y = \sqrt{2x-1}$

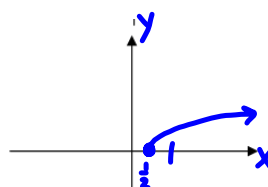
Domain: $\{x|x \geq \frac{1}{2}\}$

Range: $\{y|y \geq 0\}$

Sketch:

$$2x-1 \geq 0$$

$$x \geq \frac{1}{2}$$



10. $y = \frac{4}{3x-1}$

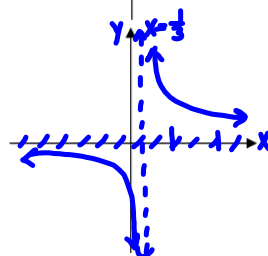
Domain: $\{x|x \neq \frac{1}{3}\}$

Range: $\{y|y \neq 0\}$

Sketch:

$$3x-1=0$$

$$x=\frac{1}{3}$$



Sep 15-10:09 AM

11. Given: $f(x) = x^2 - 3x + 4$, find

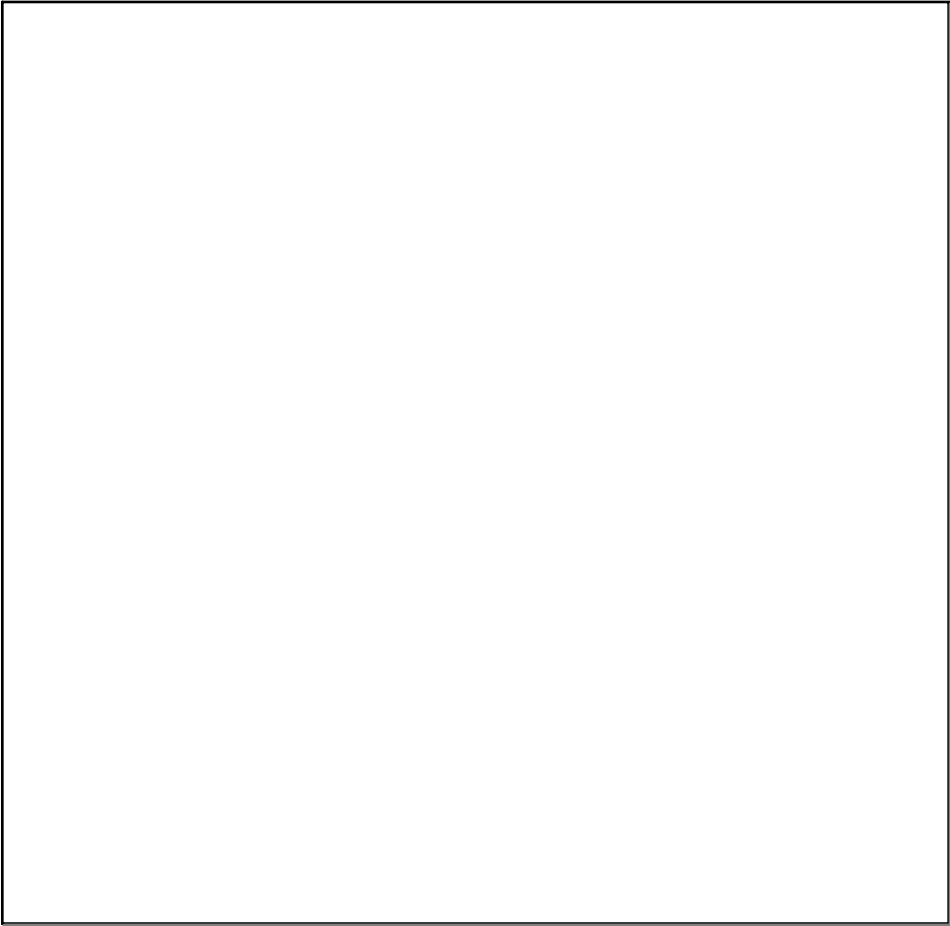
a. $f(2) = 4 - 6 + 4 = 2$

b. $f(-2) = 4 + 6 + 4 = 14$

c. $f(a-1) =$
 $(a-1)^2 - 3(a-1) + 4$
 $= a^2 - 2a + 1 - 3a + 3 + 4$
 $= a^2 - 5a + 8$

$(a-1)(a-1)$

Sep 15-10:09 AM



Sep 10-9:28 PM