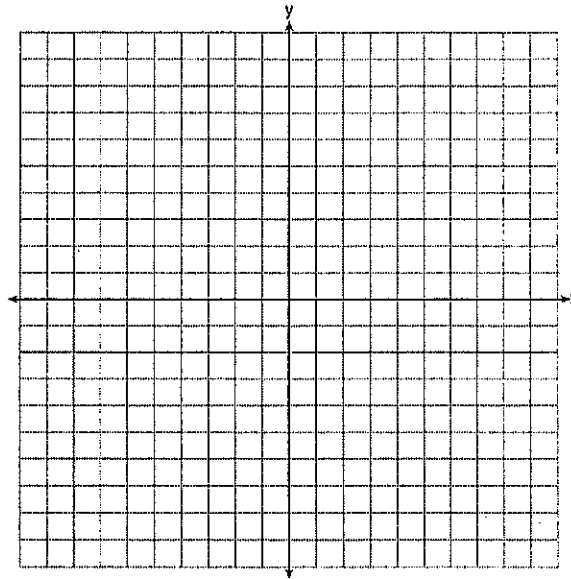


Extra Extra Midterm Review

1. Solve the given set of inequalities by graphing on the coordinate plane below and label the solution set S .

$$y \leq 3x + 1$$

$$y + x > -3$$



Is the point $(-1, -2)$ in the solution of the system of inequalities?

Justify your answer algebraically.

2. Factor each expression completely.

A) $5x^4 + 10x^3 - 40x^2$

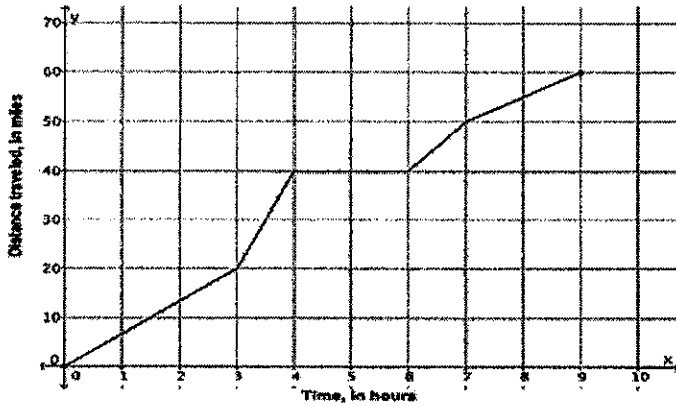
B) $3x^2 - 243$

C) $2x^3 + 2x^2 - 12x$

3. The area formula of a circle is: $A = \pi r^2$. Solve for r in terms of A and π .

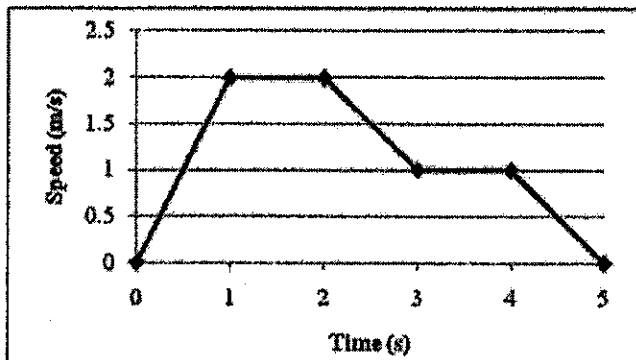
4.

Sarah went on a bike ride. The graph below shows the distance, y , in miles, that she had traveled after biking for x hours.



Calculate the average rate of change from the 3rd hour to the 9th hour.

5. Use the graph below to answer the following questions.



Explain what is happening from: 0 seconds to 1 second

1 second to 2 seconds

4 seconds to 5 seconds

6. Solve the following equation for y . $6(by + 5) = 19$

7. If the function $f(x) = 2x + 5$ has the domain $1 \leq x \leq 5$, what is its range?

Extra Extra Midterm Review

1. Solve the given set of inequalities by graphing on the coordinate plane below and label the solution set S.

$$y \leq 3x + 1$$

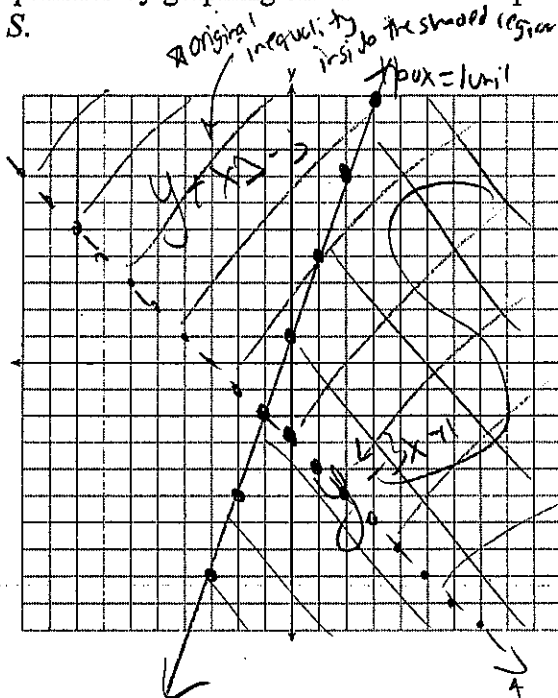
$$y + x > -3$$

$$y \leq 3x + 1$$

$$m = \frac{3}{1} \uparrow$$

$$B = 1$$

- solid
- shade below



$$y + x > -3$$

$$-x - x$$

$$y > -x - 3$$

$$m = -\frac{1}{1} \downarrow$$

$$B = -3$$

- dotted
- shade above

Is the point $(-1, -2)$ in the solution of the system of inequalities?

NO, it is not a solution b/c even though it is the P.O.I. of the 2 lines one of the lines is dotted (which means it is not equal to) and therefore it does not satisfy both inequalities & it is not a solution point. Justify your answer algebraically.

$$y \leq 3x + 1$$

$$-2 \leq 3(-1) + 1$$

$$-2 \leq -3 + 1$$

$$-2 \leq -2 \checkmark$$

$$y + x > -3$$

$$-2 + (-1) > -3$$

$$-3 > -3 \quad \times$$

Since the point doesn't satisfy both inequalities, it can't be a solution point

2. Factor each expression completely.

A) $5x^4 + 10x^3 - 40x^2$

GCMF $5x^2(x^2 + 2x - 8)$
Tri $5x^2(x + 4)(x - 2)$

B) $3x^2 - 243$

GCMF $3(x^2 - 81)$
Difs $3(x + 9)(x - 9)$

C) $2x^3 + 2x^2 - 12x$

GCMF $2x(x^2 + x - 6)$
Tri $2x(x + 3)(x - 2)$

3. The area formula of a circle is: $A = \pi r^2$. Solve for r in terms of A and π .

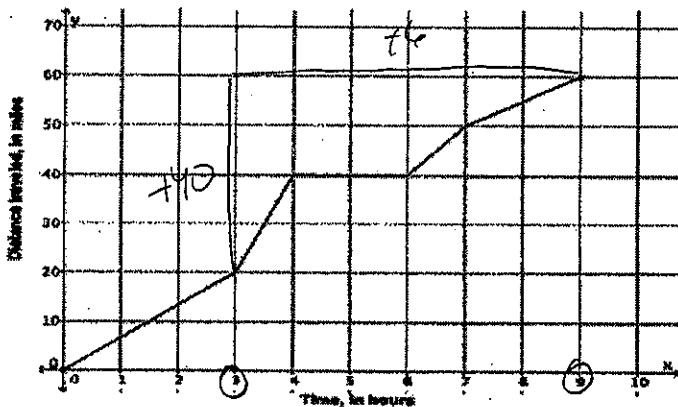
$$\frac{A}{\pi} = \frac{\pi r^2}{\pi}$$

$$\sqrt{r^2} = \sqrt{\frac{A}{\pi}}$$

$$r = \sqrt{\frac{A}{\pi}}$$

4.

Sarah went on a bike ride. The graph below shows the distance, y , in miles, that she had traveled after biking for x hours.

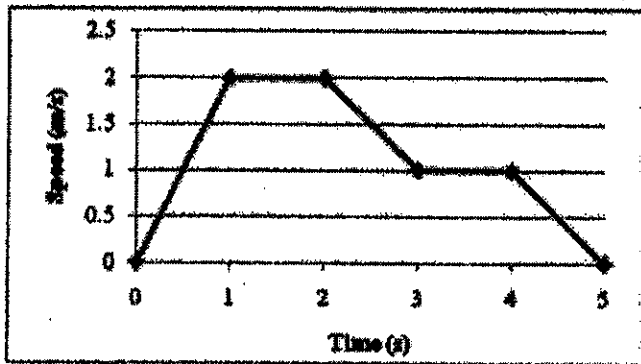


$m = \frac{\text{rise}}{\text{run}}$
 $m = \frac{20}{3}$
 $m = \frac{20}{3}$
 $m = 6\frac{2}{3} \text{ mph}$

slope

Calculate the average rate of change from the 3rd hour to the 9th hour.

5. Use the graph below to answer the following questions.



Explain what is happening from: 0 seconds to 1 second → The person's speed is increasing

1 second to 2 seconds → The person's speed is constant

4 seconds to 5 seconds → The person's speed is decreasing

6. Solve the following equation for y .

$6(by + 5) = 19$
 $6by + 30 = 19$
 $\frac{6by}{6b} = \frac{19 - 30}{6b}$
 $y = \frac{-11}{6b}$

7. If the function $f(x) = 2x + 5$ has the domain $1 \leq x \leq 5$, what is its range?

put interval & go to the table
 $f(x) = 2x + 5$ (2nd graph)

write as an inequality → $7 \leq y \leq 15$
 $7 \leq f(x) \leq 15$

x	y
1	7
2	9
3	11
4	13
5	15