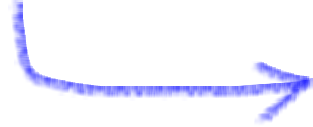


QUESTIONS ON HW



Pick Up
the
Warm Up

1. If $g(x) = x^2 - 5$, find

a) $g\left(\frac{1}{2}\right) = \left(\frac{1}{2}\right)^2 - 5$
 $= \frac{1}{2} \cdot \frac{1}{2} - 5 = \frac{1}{4} - 5$
 $= -4.75$

b) $g(-5) =$
 $(-5)^2 - 5$
 $= 25 - 5 = 20$

c) $g(h+1) = (h+1)^2 - 5$
 $= (h+1)(h+1) - 5$
 $= h^2 + h + h + 1 - 5$
 $= h^2 + 2h - 4$

$g(\text{input})$

c) $g(\underline{h+1}) =$

$$\begin{aligned} & (h+1)^2 - 5 \\ & (h+1)(h+1) - 5 \\ & h^2 + h + h + 1 - 5 = \boxed{h^2 + 2h - 4} \end{aligned}$$

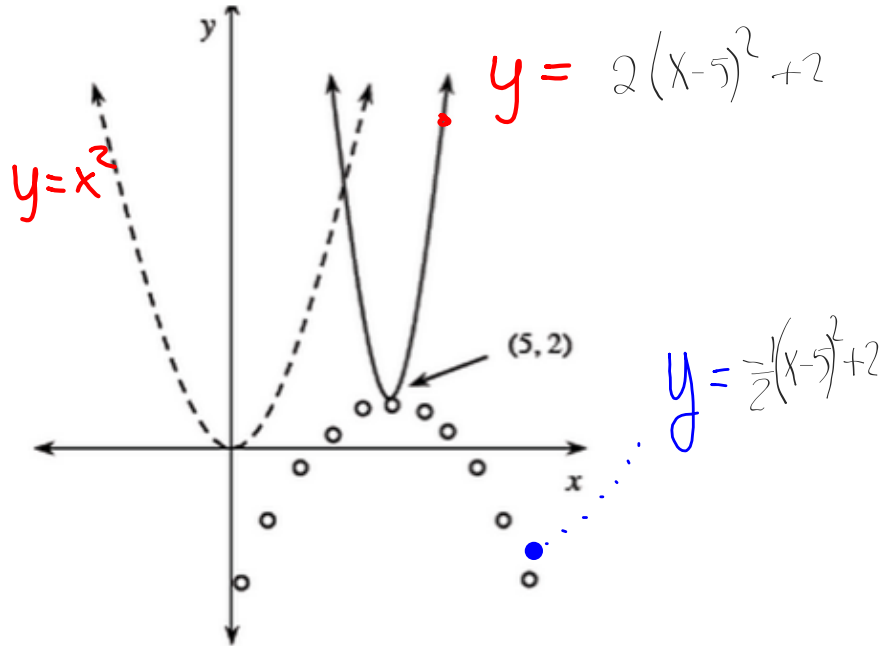
$$(x+7)^2 \neq x^2 + 49$$

$$(x+7)(x+7)$$

$$x^2 + 7x + 7x + 49$$

$$= x^2 + 14x + 49$$

- 2.** The graph of $y = x^2$ is shown as a dashed curve at right. Estimate the equations of the two other parabolas.



- 3.** Write each expression below in simplest radical form.

$$\sqrt{75} + \sqrt{27}$$

$$\sqrt{25} \cdot \sqrt{3} + \sqrt{9} \cdot \sqrt{3}$$

$$5\sqrt{3} + 3\sqrt{3}$$

$$8\sqrt{3}$$

$$\sqrt{x} + 2\sqrt{x}$$

$$3\sqrt{x}$$

$$(\sqrt{12})^2$$

$$12$$

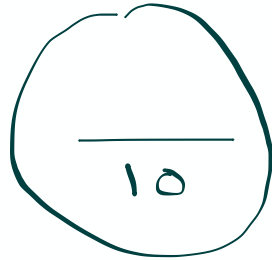
$$(3\sqrt{12})^2$$

$$3^2 \cdot 12^2$$

$$9 \cdot 12$$

$$108$$

Yesterday's HW



Compare your HW
to mine

Today :

Notes

"A missing Transformation"

Just Observe
for a moment

What kind of geometric
transformation have you made
when you replace

$f(x)$ with $f(x) + k$?

$$y = x^2$$

$$y = x^2 + 3$$

$$y = \sqrt{x}$$

$$y = \sqrt{x} - 30$$

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

$$y = \frac{1}{x} + 7$$

What kind of Geometric Transformations occur when you replace

$f(x)$ with $-f(x)$?

$$y = x^3 \quad y = -x^3$$

$$y = |x| \quad y = -|x|$$

$$y = \sqrt{x}$$

$$y = \sqrt{x}$$

What kind of geometric transformations happen if you replace

$f(x)$ with $f(x-h)$?

$$y = x^2 \quad y = (x-3)^2$$

$$y = ab^x \quad y = ab^{x+4}$$

$$y = \frac{1}{x} \quad y = \frac{1}{x+3}$$

What kind if •

$f(x)$ to $a \cdot f(x)$

$$f(x) = x^2 \quad f(x) = 6x^2$$

$$f(x) = \sqrt{x} \quad f(x) = 5\sqrt{x}$$

$$f(x) = \frac{1}{x} \quad f(x) = 10 \cdot \frac{1}{x}$$



What type of transformation takes place when you...

replace $f(x)$ with $f(-x)$

$$y = (x)^3 \quad \text{with} \quad y = (-x)^3$$

$$y = \left(\frac{1}{x}\right) \quad \text{with} \quad y = \frac{1}{(-x)}$$

GDC

$$y_2 = x^3 \quad \text{with} \quad y_1 = (-x)^3$$

$$y_2 = \frac{1}{x} \quad \text{with} \quad y_1 = \frac{1}{(-x)}$$

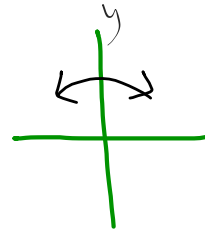
Summary

NOTES

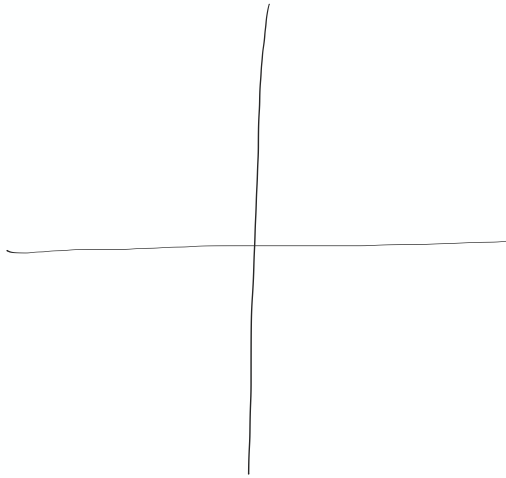
Replacing x with $(-x)$
creates a reflection across the
y-axis

examples $y = x^3 \implies y = (-x)^3$

$$y = \frac{1}{x} \implies y = \frac{1}{(-x)}$$



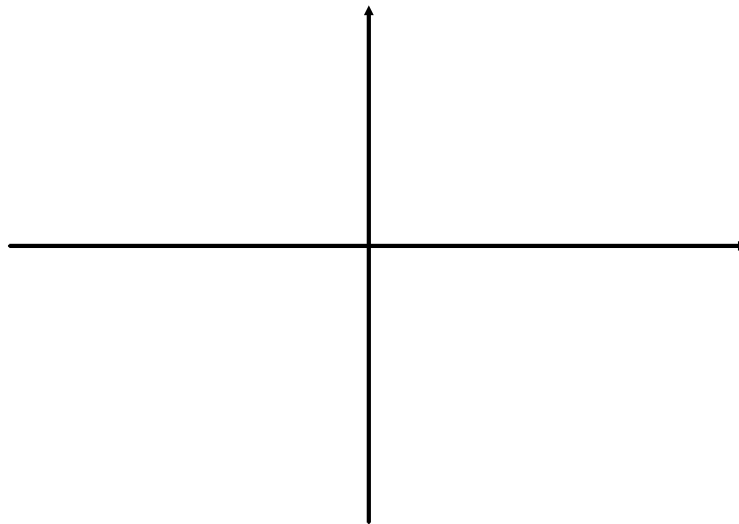
$$f(x) = x^2 + 8x + 7$$



example 8

$$f(x) = x^2 + 8x + 7$$

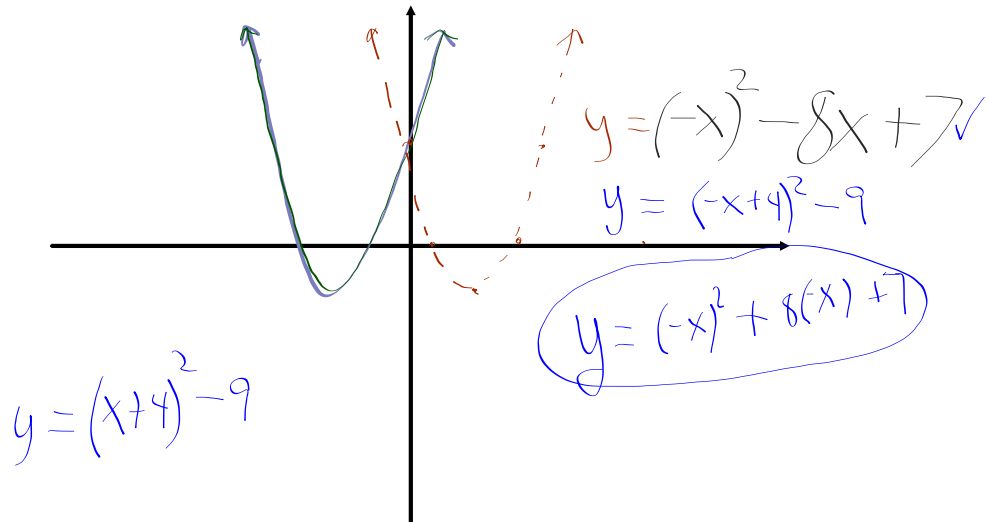
Sketch $f(x)$ and $f(-x)$ and label



example 8

$$f(x) = x^2 + 8x + 7$$

Sketch $f(x)$ and $f(-x)$ and label



Translating
Circles

New
Title



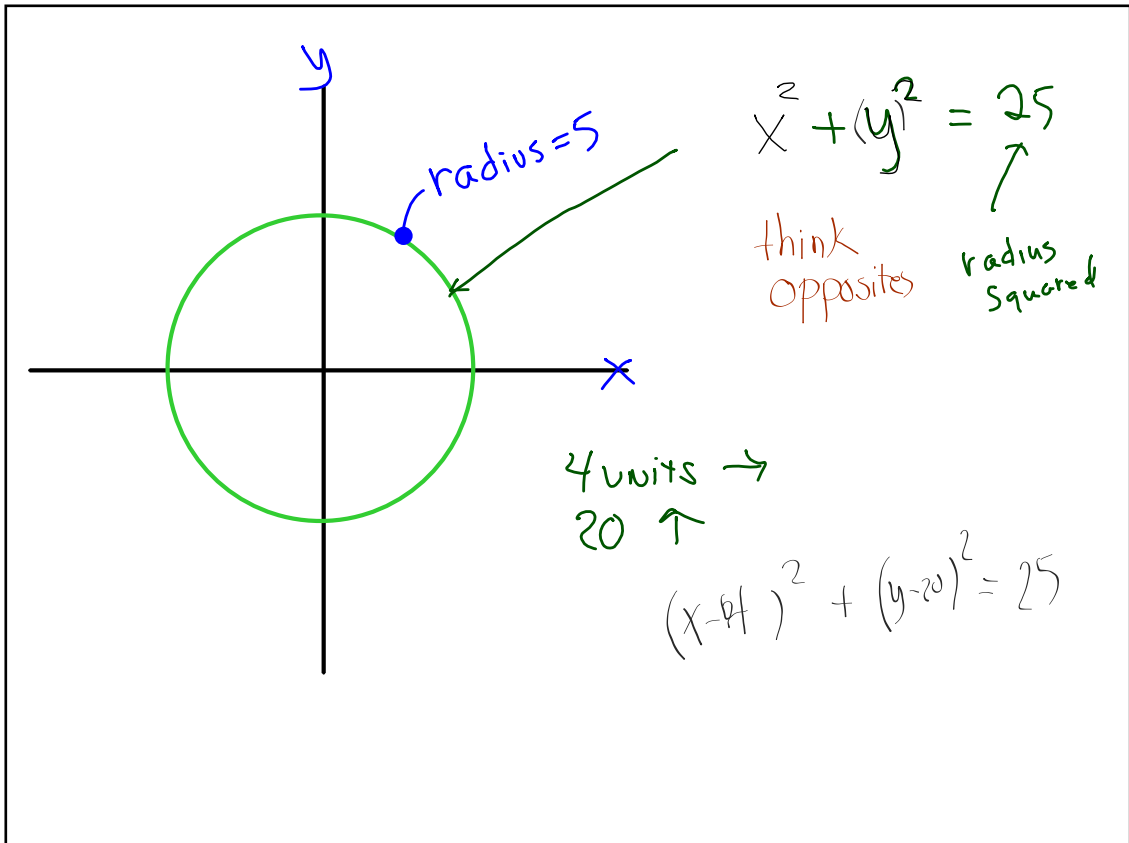
background

$$y - 20 = (x - 8)^2$$

y

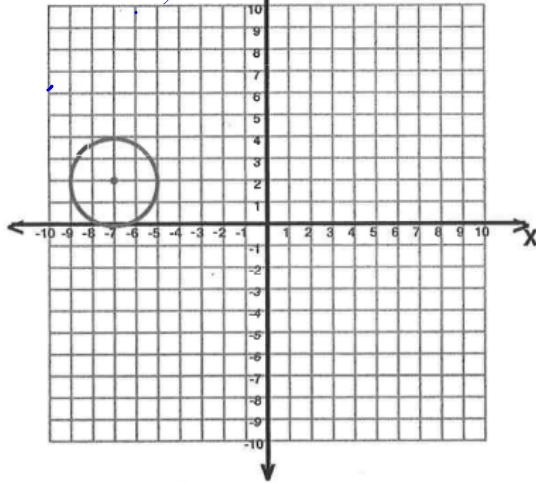
x - 8

+ 20



Identify the center and radius of each circle.

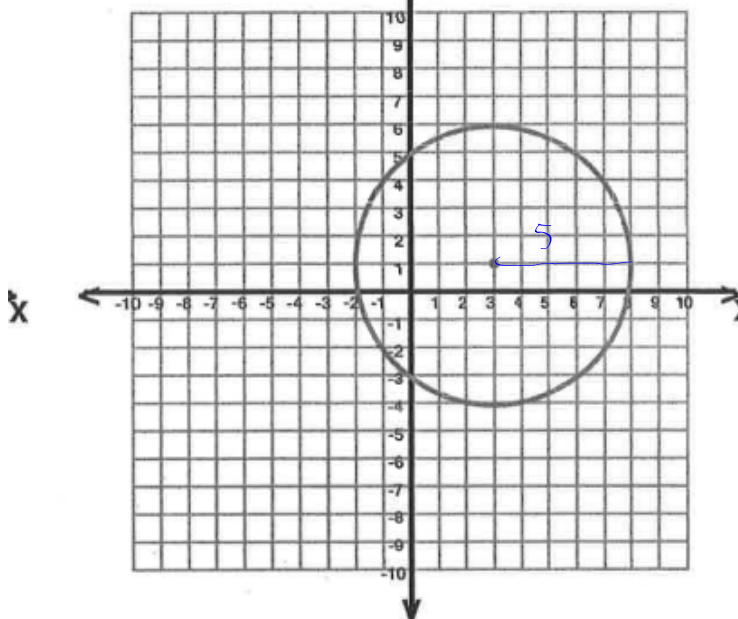
1) $(x + 7)^2 + (y - 2)^2 = 4$

Center $(-7, 2)$ Radius 2 

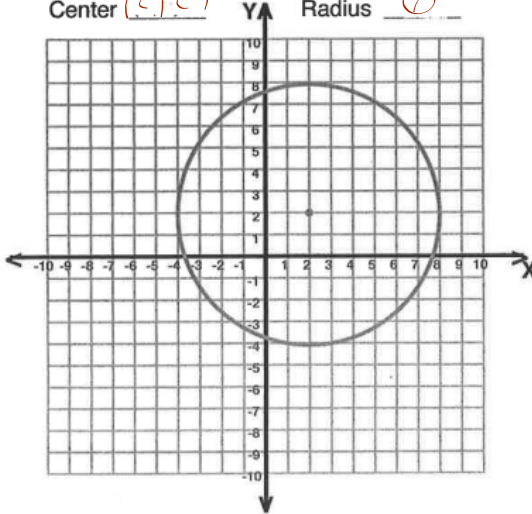
$$x^2 + y^2 = 4$$

$$(x + 7)^2 + (y - 2)^2 = 4$$

2) $(x - 3)^2 + (y - 1)^2 = 25$

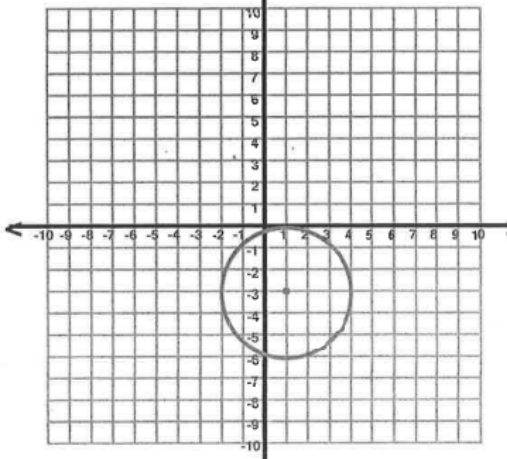
Center $(3, 1)$ Radius 5 

3)

Center $(2, 2)$ Radius 6 

$$(x-2)^2 + (y-2)^2 = 36$$

4)

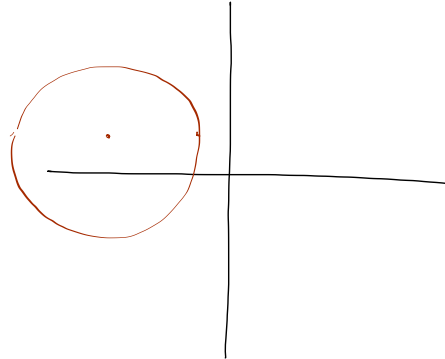
Center $(1, -3)$ Radius 3 

$$(x-1)^2 + (y+3)^2 = 9$$

Sketch a circle that has the equation.....

$$(x+3)^2 + (y-1)^2 = 4$$

← ↑



Graph

$x^2 + y^2 = 25$ on your calculator

$$\sqrt{y^2} = \sqrt{25-x^2}$$

$$y = \pm \sqrt{25-x^2}$$

$$y_1 = \sqrt{25-x^2}$$

$$y_2 = -\sqrt{25-x^2}$$

two functions

Graph $(x-4)^2 + (y+5)^2 = 9$

$$(y+5)^2 = 9 - (x-4)^2$$

$$\sqrt{\quad} \quad \sqrt{\quad}$$

$$y+5 = \pm \sqrt{9 - (x-4)^2} - 5$$

$$y = \pm \sqrt{9 - (x-4)^2} - 5$$

HW
Questions

③ Parent Graph Name: *Cubic*

a) Parent Equation:

b) Description of Transformation:

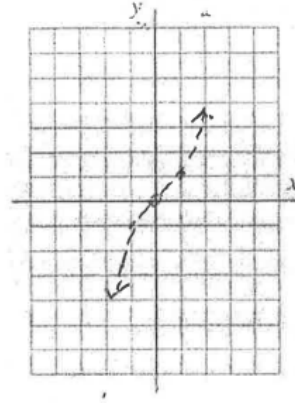
c) Sketch Transformed Graph, $T(x)$
(Parent is already shown)

d) Write coordinates of the new locator point.

e) Write Transformation function, $T(x)$

f) List domain of $T(x)$ _____ List range of $T(x)$ _____

g) List equation(s) of any asymptotes of $T(x)$ h) Describe any symmetry



④ Parent Graph Name: *Parabola*

h) Parent Equation:

i) Description of Transformation:

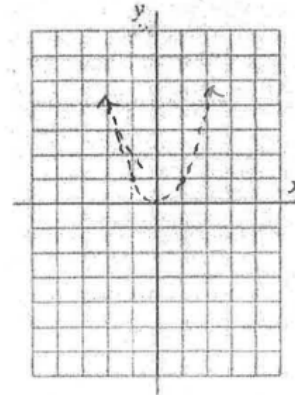
j) Sketch Transformed Graph, $T(x)$
(Parent is already shown)

k) Write coordinates of the new locator point.

l) Write Transformation function, $T(x)$

m) List domain of $T(x)$ _____ List range of $T(x)$ _____

n) List equation(s) of any asymptotes of $T(x)$ h) Describe any symmetry



5) Parent Graph Name: Hyperbola (reciprocal)

o) Parent Equation:

p) Description of Transformation:
Translate 3 units right
and 5 units up

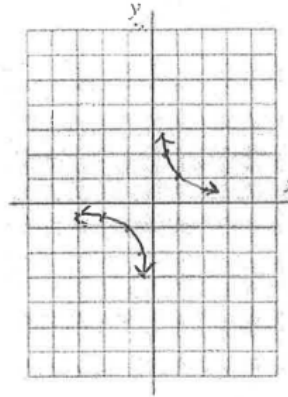
q) Sketch Transformed Graph, $T(x)$

r) Write coordinates of the new locator point.

s) Write Transformation function, $T(x)$

t) List domain of $T(x)$ _____ List range of $T(x)$ _____

u) List equation(s) of any asymptotes of $T(x)$ h) Describe any symmetry



6) Parent Graph Name:

v) Parent Equation: $y = \frac{-1}{x^2}$

w) Description of Transformation:

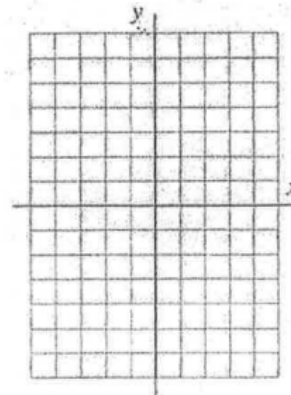
x) Sketch Transformed Graph, $T(x)$
(Parent is already shown)

y) Write coordinates of the new locator point.

z) Write Transformation function, $T(x)$

aa) List domain of $T(x)$ _____ List range of $T(x)$ _____

bb) List equation(s) of any asymptotes of $T(x)$ h) Describe any symmetry



Work Backwards starting from graph

Name _____ per. _____

⑦ Parent Graph Name: _____

a) Parent Equation: _____

b) Description of Transformation: _____

c) Sketch Transformed Graph, $T(x)$
(Parent is already shown)

d) Write coordinates of the new locator point.

e) Write Transformation function, $T(x)$

f) List domain of $T(x)$ _____ List range of $T(x)$ _____

g) List equation(s) of any asymptotes of $T(x)$ ~~_____~~ h) Describe any symmetry _____

Work backwards

⑧ Parent Graph Name: _____

h) Parent Equation: _____

i) Description of Transformation: _____

j) Sketch Transformed Graph, $T(x)$
(Parent is already shown)

k) Write coordinates of the new locator point.

l) Write Transformation function, $T(x)$

m) List domain of $T(x)$ _____ List range of $T(x)$ _____

n) List equation(s) of any asymptotes of $T(x)$ _____ h) Describe any symmetry _____

DIRECTIONS: Simplify the following expressions. The student must complete the statement correctly.

1. $(3x^2)(10x^4)$

Irena Sendler was born in _____, Poland in 1910.

- a. $13x^8$ Krakow
- b. $30x^8$ Lodz
- c. $30x^6$ Warsaw

3. $(5m^3n^7)(8mn^4)$

Sendler was suspended from the school as a result of her protest against the _____; a form of segregation in the seating of students.

- a. $40m^3n^{11}$ gender divide system
- b. $40m^4n^{11}$ ghetto-bench system
- c. $13m^5n^{10}$ nationalized row system

2. $(a^5b^7)(a^3b^6)$

She studied _____ at Warsaw University.

- a. $a^{53}b^{76}$ education
- b. $a^{15}b^{42}$ medicine
- c. a^8b^{13} Polish literature

4. $(\frac{1}{2}x^5y^3)(4x^2y)(3x)$

During World War II, she served as head of the Jewish children's section of Zegota, an underground _____ organization.

- a. $2x^7y^3$ financial aid
- b. $6x^8y^4$ resistance
- c. $6x^7y^3$ social welfare

5. $(-3x^4)^2$
Undercover as a plumbing specialist, Sendler smuggled Jewish infants out of the ghettos in a _____.
- a. $-9x^8$ burlap sack
 - b. $9x^6$ raincoat
 - c. $9x^8$ tool box

7. $(5xy^3)^2(2x^5y^2)^3$
When she was discovered by the Nazis she was beaten and suffered _____.
- a. $200x^{17}y^{12}$ broken arms and legs
 - b. $10x^{12}y^{10}$ internal bleeding
 - c. $150x^{15}y^{14}$ loss of hearing

6. $(\frac{1}{4}a^4b^5)^2$
With the assistance of other Zegota members, Sendler saved roughly _____ Jewish children during the Holocaust.
- a. $\frac{1}{4}a^8b^{10}$ 25
 - b. $16a^8b^7$ 250
 - c. $\frac{1}{16}a^8b^{10}$ 2,500

8. $(\frac{1}{2}m^3n^2)^2(8mn)(-2m^4n^6)$
In 1999, high school students in Kansas staged a play based on Sendler's life, titled _____, which was adapted to a Hollywood film.
- a. $4m^4n^6$ *Holocaust Heroine*
 - b. $-4m^{11}n^{11}$ *Life in a Jar*
 - c. $-8m^{14}n^{12}$ *Underwraps*

Rotate your papers
clockwise

- Check 3 and 4 for accuracy
- Return papers

Assignment

2 128a, 129-130, 139, 146a

