



Name \_\_\_\_\_

Period \_\_\_\_\_

Date \_\_\_\_\_

**READY**

Topic: Simplifying polynomials

Use an area model to multiply.

1.  $2x(5x^2 + 7)$   
 $= 10x^3 + 14x$

2.  $(9x + 7)(x - 3)$   
 $= 9x^2 - 20x - 21$

3.  $(x - 6)^2$   
 $= x^2 - 12x + 36$

4.  $3x(-2x - 1)(2x + 6)$   
 $= 3x(-4x^2 - 14x - 6)$   
 $= -12x^3 - 42x^2 - 18x$

5.  $-x^3(x^2 - x + 1)$   
 $= -x^5 + x^4 - x^3$

6.  $(x - 1)(x^2 - 4x + 8)$   
 $= x^3 - 5x^2 + 10x - 8$

Add or subtract. Write your answers in descending order of the exponents. (Standard form)

7.  $(3x^4 + 5x^2 - 1) + (2x^3 + x)$   
 $= 3x^4 + 2x^3 + 5x^2 + x - 1$

8.  $(10x^4 + 2x^2 + 1) - (3x^4 + 3x + 11)$   
 $= (10x^4 + 2x^2 + 1) + (-3x^4 - 3x - 11)$   
 $= 7x^4 + 2x^2 - 3x - 10$

9.  $(7x^3 - 3x + 7) - (4x^2 - 3x - 11)$   
 $= (7x^3 - 3x + 7) + (-4x^2 + 3x + 11)$   
 $= 7x^3 - 4x^2 + 18$

10.  $(-6x^5 - 2x + 13) + (4x^5 + 3x^2 + x - 9)$   
 $= -2x^5 + 3x^2 - x + 4$

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**SET**

Topic: Comparing simple polynomials

11. Complete the tables below for  $y = x$  and  $y = x^3$  and  $y = x^5$

x	$y = x$
-1	-1
0	0
1	1

x	$y = x^3$
-1	-1
0	0
1	1

x	$y = x^5$
-1	-1
0	0
1	1

12. What assumption might you be tempted to make about the graphs of  $y = x$ ,  $y = x^3$  and  $y = x^5$  based on the values you found in the 3 tables above?

*That the graphs are the same*



13. What do you really know about the graphs of  $y = x$  and  $y = x^3$  and  $y = x^5$  based on the values you found in the 3 tables above?

- They are different - the only points they share in common are the 3 pts. listed above*
- They are all polynomials (1 linear, 2 curves) that get steeper as power gets larger for  $x$ -values  $< -1$  and  $> 1$*

14. Complete the tables with the additional values.

x	$y = x$
-1	-1
$-1/2$	$-1/2$
0	0
$1/2$	$1/2$
1	1

x	$y = x^3$
-1	-1
$-1/2$	$-1/8$
0	0
$1/2$	$1/8$
1	1

x	$y = x^5$
-1	-1
$-1/2$	$-1/32$
0	0
$1/2$	$1/32$
1	1

*and less steep for  $x$ -values  $-1 < x < 1$*

15. Graph  $y = x$  and  $y = x^3$  and  $y = x^5$  on the interval  $[-1, 1]$ , using the same set of axes.

On graph paper

\* Note that when the  $x$ -values are between  $-1$  and  $1$ ,  $y = x^5$  is less steep than  $y = x^3$  is less steep than  $y = x$

16. Complete the tables with the additional values.

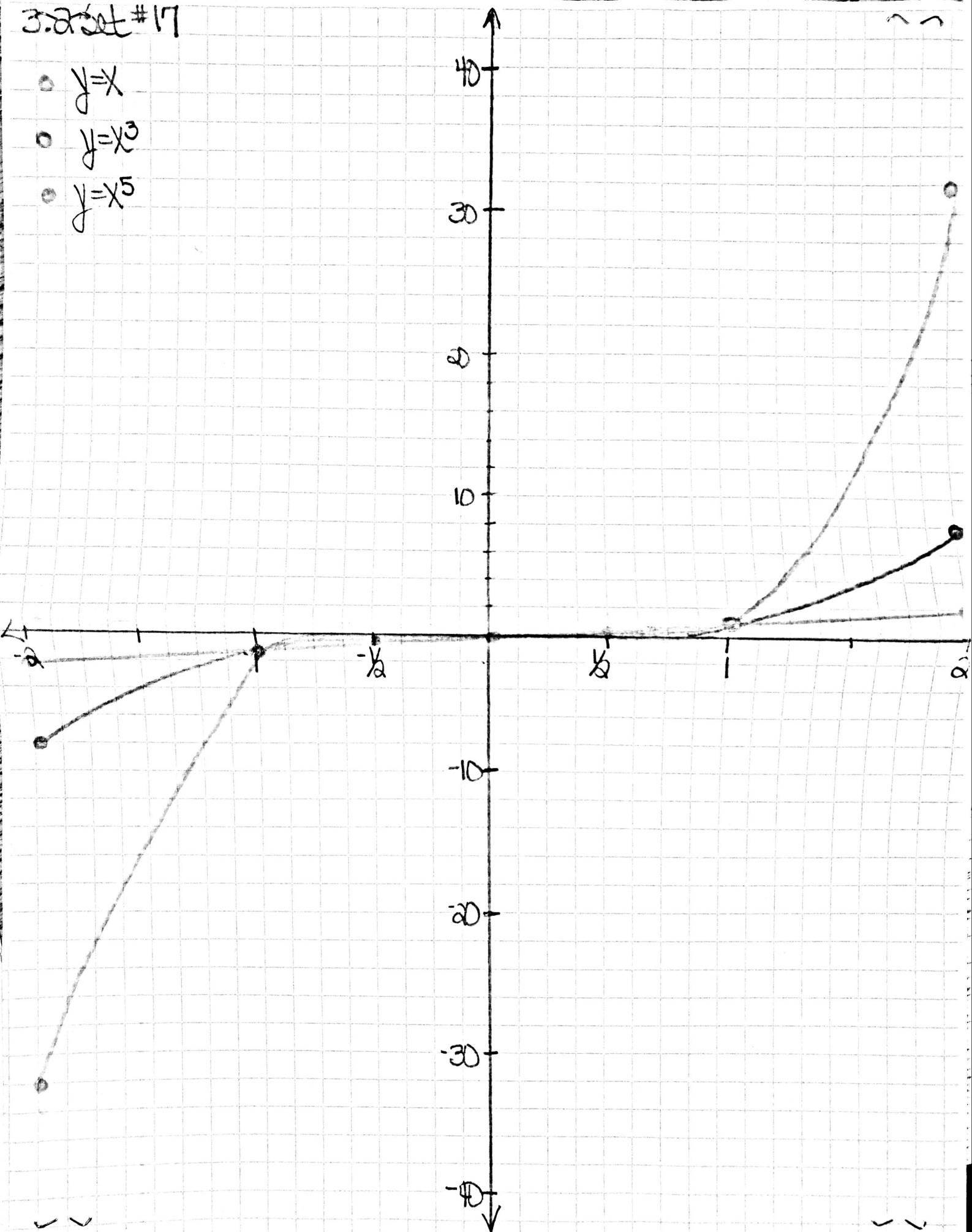
x	$y = x$
-2	-2
-1	-1
$-1/2$	$-1/2$
0	0
$1/2$	$1/2$
1	1
2	2

x	$y = x^3$
-2	-8
-1	-1
$-1/2$	$-1/8$
0	0
$1/2$	$1/8$
1	1
2	8

x	$y = x^5$
-2	-32
-1	-1
$-1/2$	$-1/32$
0	0
$1/2$	$1/32$
1	1
2	32

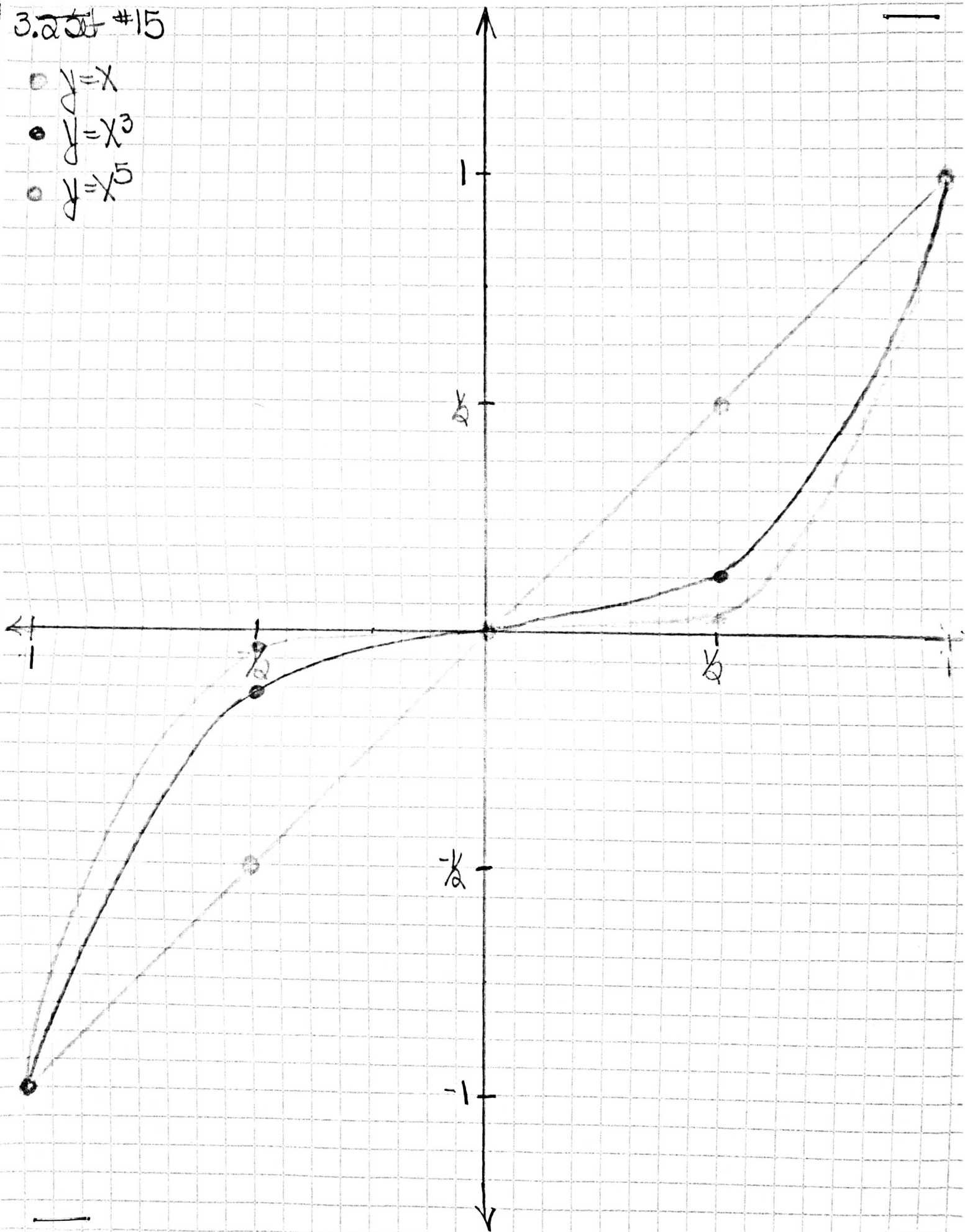
3.2 set #17

- $y=x$
- $y=x^3$
- $y=x^5$



3.25 #15

- $y=x$
- $y=x^3$
- $y=x^5$



17. Graph  $y = x$  and  $y = x^3$  and  $y = x^5$  on the interval  $[-2, 2]$ , using the same set of axes.

On graph paper

\* Note that when the  $x$ -values are less than  $-1$  or greater than  $1$ ,  $y = x^5$  is steeper than  $y = x^3$  is steeper than  $y = x$

GO

Topic: Using the exponent rules to simplify expressions

Simplify.

$$\begin{aligned} 18. x^{1/3} \cdot x^{1/6} \cdot x^{1/4} \\ = x^{2/6} \cdot x^{1/2} \cdot x^{3/12} \\ = x^{1/2} \cdot x^{1/2} \cdot x^{1/4} \\ = x^{3/4} \end{aligned}$$

$$\begin{aligned} 19. a^{2/5} \cdot a^{3/10} \cdot a^{2/15} \\ = a^{4/10} \cdot a^{3/10} \cdot a^{4/15} \\ = a^{7/10} \cdot a^{4/15} \\ = a^{5/6} \end{aligned}$$

$$\begin{aligned} 20. m^{4/7} \cdot m^{3/14} \cdot m^{5/28} \\ = m^{8/14} \cdot m^{3/14} \cdot m^{5/28} \\ = m^{11/14} \end{aligned}$$