Complex Numbers Homework (Continued)

Directions: Be sure to show all work, communicate your thought process, and justify your reasoning. Remember to check that your answers are complete, correct, and reasonable. Do not forget to complete the "Throwback" problems! ☺

SIMPLIFY EACH EXPRESSION.

1. $(5i-3)-i(8i-1)$

2. $(4i+1)-2i(i-1)$

3. $3(7-3i)-4i(2i+2)$

4. $-2i(i-9)+4i(7i-3)$

WRITE EACH PRODUCT IN STANDARD FORM.

5. $(8-2i)^2$

6. $(5i+4)(5i-4)$

7. $(9+2i)(2i-9)$

8. $(4+3i)(8i-2)$

9. $(10+10i)(5-5i)$

10. $i(3i^2-3)(7+2i^3)$

11. $2i(i^4-4)(3-8i^3)$

12. $(2i-4)^2$

SELECT ALL CELLS IN THE TABLE FOR WHICH THE PRODUCT OF THE ROW AND THE COLUMN IS A REAL NUMBER.

13.

	i	-9	$2i+2$
$2i-2$			
-1			
$10i$			
$3i^4-11$			

SELECT ALL OF THE EXPRESSIONS THAT EVALUATE TO A COMPLEX NUMBER.

14.

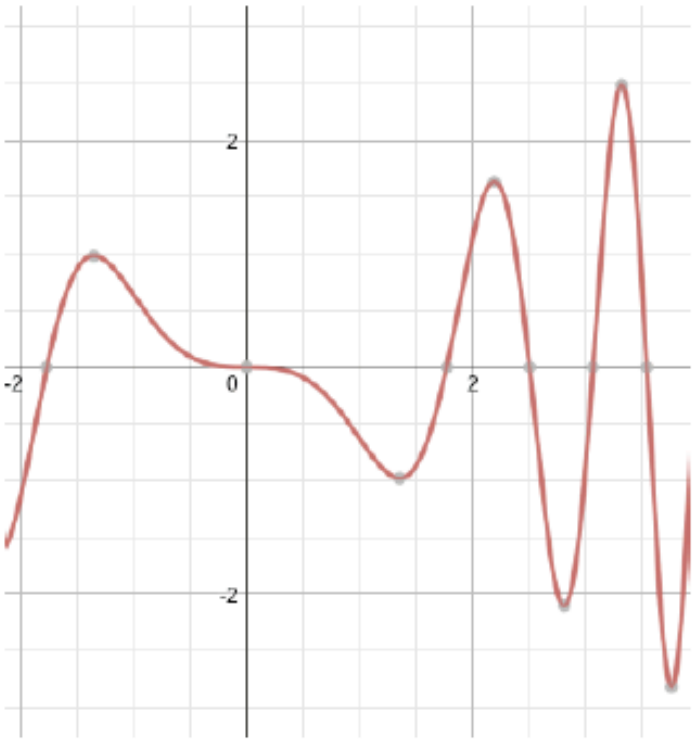
- ☐ $(-4i)^{12}$
- ☐ $(7i)^{30}$
- ☐ $(3 + i)^2$
- ☐ $(\sqrt{-34})^2$
- ☐ $(7 + 11i)(-11 + 7i)$
- ☐ $(8 - 2i)(2i + 8)$

THROWBACK!

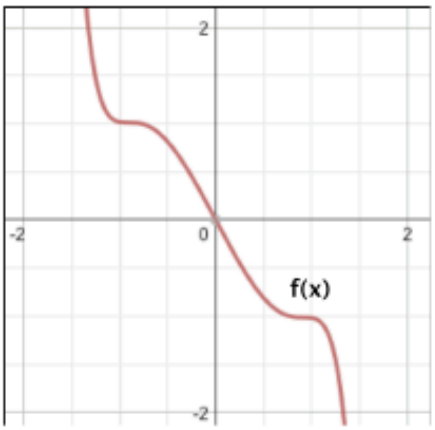
1. **For which interval on the graph, is the average rate of change the highest?**

$-1.5 \le x \le -0.75$ $1.75 \le x \le 2.25$

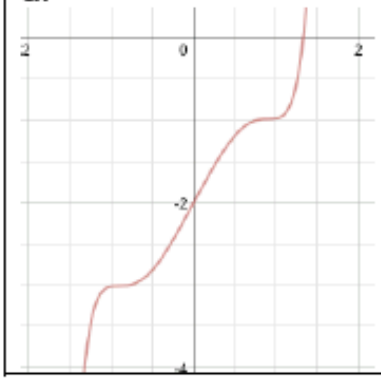
$2.25 \le x \le 2.75$ $2.75 \le x \le 3.50$



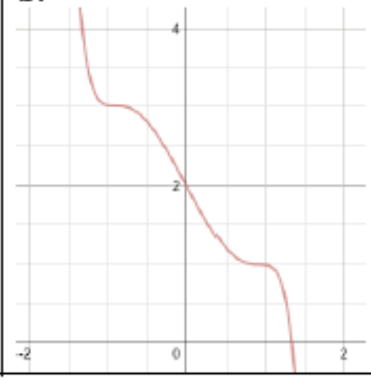
2. **Consider the pictured function f(x). Which graph shows -f(x) + 2?**



a.



b.



c.

3. **Sally paints seashells and sells them for $1.25 each to raise money for a charity. She has already sold 25 shells. Let *s* be the number of seashells Sally sells, and *c(s)* be the amount of money Sally collects from sales.**

a. Write a function for c(s).

b. Sally only has 200 seashells available this week. Which is the most accurate domain for your function c(s) for Sally this week?

☐ $0 \le s \le 200$, where s is a whole number

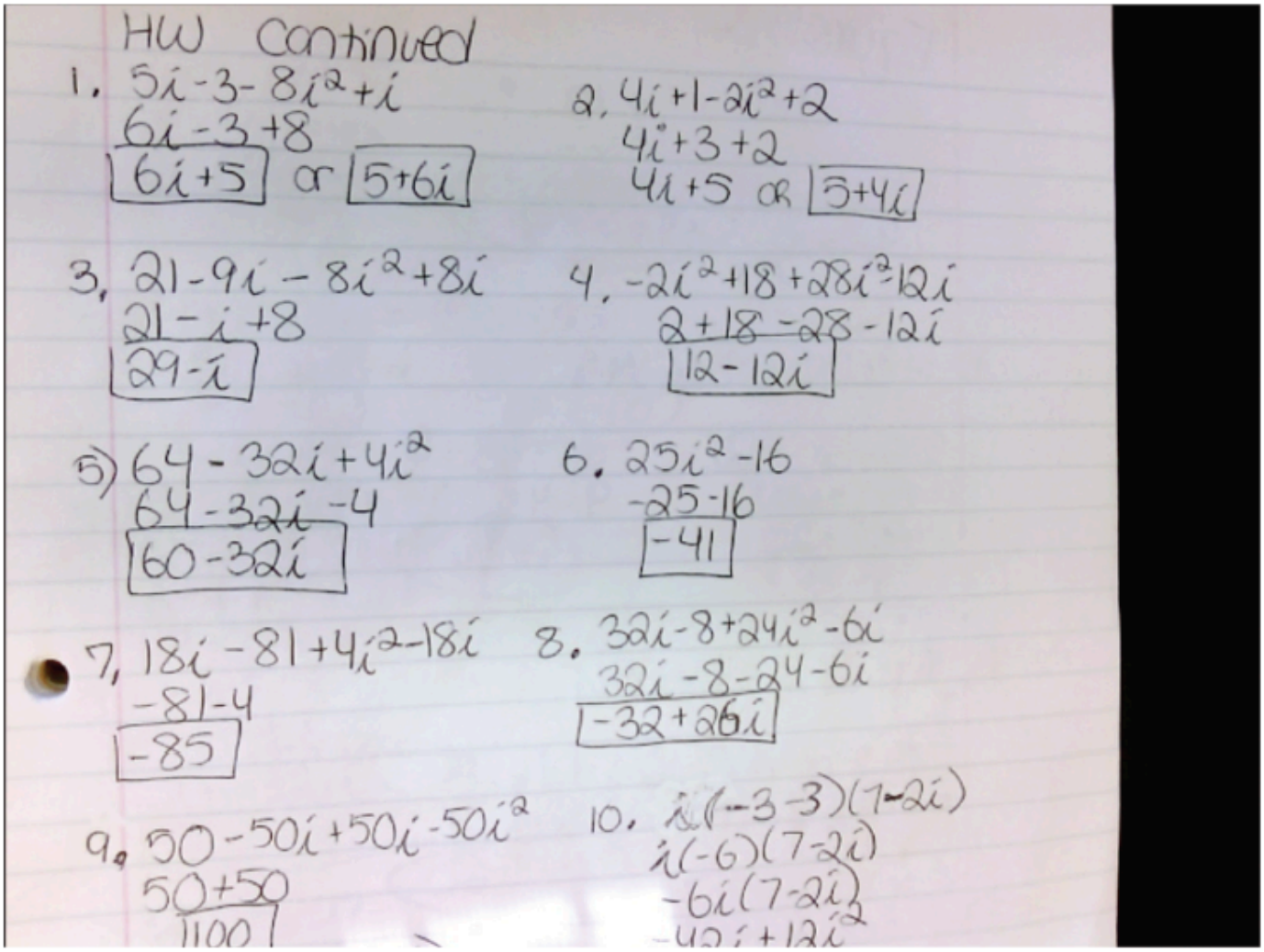
☐ $0 \le s < 200$, where s is a whole number

☐ $0 \le s \le 175$, where s is a whole number

☐ $0 \le s < 175$, where s is a whole number

c. Sally pays about 23 cents per seashell for her supplies. Write a function to determine the profit Sally makes when she sells *s* seashells.

Solutions



HW continued

1. $5i-3-8i^2+i$
$6i-3+8$
$\boxed{6i+5}$ or $\boxed{5+6i}$

2. $4i+1-2i^2+2$
$4i+3+2$
$4i+5$ or $\boxed{5+4i}$

3. $21-9i-8i^2+8i$
$21-i+8$
$\boxed{29-i}$

4. $-2i^2+18+28i^2-12i$
$2+18-28-12i$
$\boxed{12-12i}$

5) $64-32i+4i^2$
$64-32i-4$
$\boxed{60-32i}$

6. $25i^2-16$
$-25-16$
$\boxed{-41}$

7. $18i-81+4i^2-18i$
$-81-4$
$\boxed{-85}$

8. $32i-8+24i^2-6i$
$32i-8-24-6i$
$\boxed{-32+26i}$

9. $50-50i+50i-50i^2$
$50+50$
$\boxed{100}$

10. $i(-3-3)(7-2i)$
$i(-6)(7-2i)$
$-6i(7-2i)$
$-42i+12i^2$

5) $64 - 32i + 4i^2$
$64 - 32i - 4$
$\boxed{60 - 32i}$

6. $25i^2 - 16$
$-25 - 16$
$\boxed{-41}$

7. $18i - 81 + 4i^2 - 18i$
$-81 - 4$
$\boxed{-85}$

8. $32i - 8 + 24i^2 - 6i$
$32i - 8 - 24 - 6i$
$\boxed{-32 + 26i}$

9. $50 - 50i + 50i - 50i^2$
$50 + 50$
$\boxed{100}$

10. $i(-3-3)(7-2i)$
$i(-6)(7-2i)$
$-6i(7-2i)$
$-42i + 12i^2$
$-42i - 12$
$\boxed{-12 - 42i}$

11. $2i(1-4)(3+8i)$
$2i(-3)(3+8i)$
$-6i(3+8i)$
$-18i - 48i^2$
$-18i + 48$
$\boxed{48 - 18i}$

12. $4i^2 - 16i + 16$
$-4 - 16i + 16$
$\boxed{12 - 16i}$

SELECT ALL CELLS IN THE TABLE FOR WHICH THE PRODUCT OF THE ROW AND THE COLUMN IS A REAL NUMBER.

13.

	i	-9	$2i + 2$
$2i - 2$			✓
$-i$		✓	
$10i$	✓		
$3i^4 - 11$		✓	

SELECT ALL OF THE EXPRESSIONS THAT EVALUATE TO A COMPLEX NUMBER.

14.

- ☐ $(-4i)^{12}$
- ☐ $(7i)^{30}$
- ☑ $(3 + i)^2$
- ☐ $(\sqrt{-34})^2$
- ☑ $(7 + 11i)(-11 + 7i)$
- ☐ $(8 - 2i)(2i + 8)$

Throwback

1. $2.75 \le x \le 3.50$
2. b
3. a. c(s) = 1.25s + 31.25
   b. $0 \le s \le 175$, where s is a whole number
   c. p(s) = 1.12s