

Given  $f(x) = -4x^2 - 3$ ,  $g(x) = 5x + 4$ , and  $h(x) = 12x$ , find:

- |                  |                |
|------------------|----------------|
| 1. $f + g$       | 6. $f(h(x))$   |
| 2. $g - h$       | 7. $g \cdot f$ |
| 3. $h \cdot g$   | 8. $f - g$     |
| 4. $\frac{f}{g}$ | 9. $g(g(x))$   |
| 5. $g \circ f$   |                |

Problem 10 refers to the relation  $\{(-3, 8), (5, 2), (4, 7), (-12, 8)\}$ .

- 10a. Is the relation a function?  
 b. What is the inverse of the relation?  
 c. Is the inverse of the relation a function?

For each function, find an equation for the inverse.

- |                               |                                    |
|-------------------------------|------------------------------------|
| 11. $f(x) = \frac{2}{3}x + 4$ | 13. $y = \frac{7}{3}(4x - 3) + 12$ |
| 12. $h(x) = \frac{5x - 8}{4}$ |                                    |

Use composition to verify whether the two functions are inverses of each other. Write “yes” or “no” AND the result of the composition.

14.  $f(x) = 4(x + 7) - 2$ ,  $f^{-1}(x) = \frac{x + 2}{4}$

Evaluate. (WITHOUT A CALCULATOR)

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|------------------------------|---|
| 15. $\lceil 2.1 \rceil$      | 23. $\lfloor -12.032 \rfloor$                                   |
| 16. $ -1.275 $               | 24. $ 11.884 $  |
| 17. $\lceil -5.1 \rceil$     | 25. $\lfloor 6.991 \rfloor$                                     |
| 18. $\lfloor -8.9 \rfloor$   | 26. $\lceil 4.2 \rceil - \lfloor 4.2 \rfloor +  4.2 $           |
| 19. $\lceil -12.2 \rceil$    | 27. $\lceil 2.99 \rceil - 4 \cdot \lfloor 1.6 \rfloor$          |
| 20. $\lfloor 14.3 \rfloor$   | 28. $\lfloor -3.2 \rfloor + \lceil -4.8 \rceil +  -9.6 $        |
| 21. $\lceil 31.675 \rceil$   | 29. $ -7  -  -12  +  6 $  |
| 22. $\lfloor -17.05 \rfloor$ | 30. $\lfloor 8.2 - 3.1 \rfloor + \lceil 2 \cdot 4.1 + 6 \rceil$ |