

## 2.5 check even answers #28,30

28. The linear function  $g$  has rate of change  $-12$  and initial value  $100$ .

$$y = -12x + 100$$

30. The graph of the linear function  $k$  has slope  $-\frac{4}{5}$  and  $y$ -intercept  $-2$ .

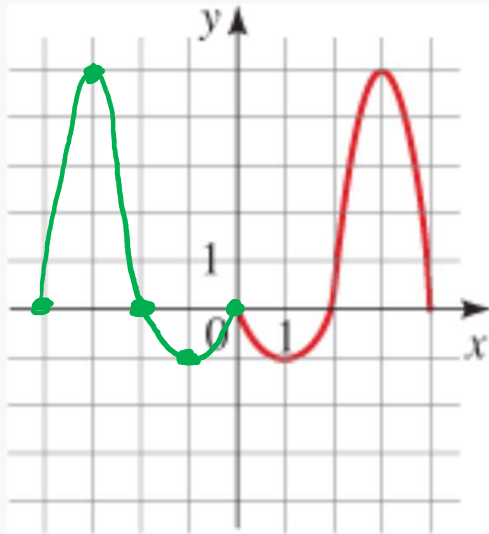
$$y = -\frac{4}{5}x - 2$$



## 2.6 check even answers #25–28,92

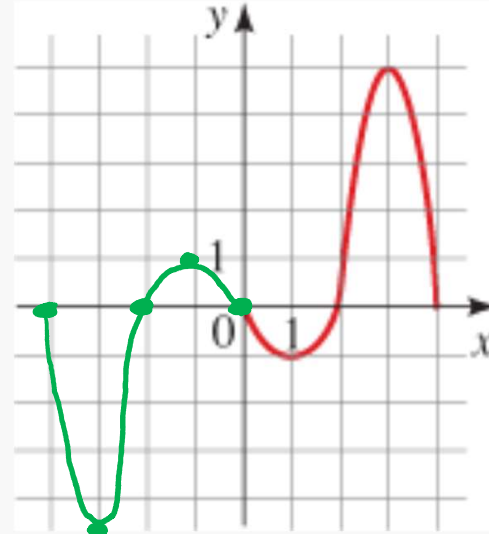
25. **II**   26. **IV**   27. **I**   28. **III**

92.



even

(y-axis symmetry)



odd

(origin symmetry)  
180° rotation

## NOTES 2.7 Operations/Composition of Functions

$$f(x) + g(x)$$

$$f(x) - g(x)$$

$$f(x) \bullet g(x) \text{ or } (f \bullet g)(x)$$

← multiply ↓

compare to →  $(f \circ g)(x)$  or  $f(g(x))$

↑ composition ↓

$$\frac{f(x)}{g(x)} \text{ or } \left(\frac{f}{g}\right)(x)$$

$$(g \circ f)(x) \text{ or } g(f(x))$$

Examples: Given  $\rightarrow f(x) = 3x^2 - 4$        $g(x) = 4x + 5$

Find:

$(-\infty, \infty)$

⊙ or  $D: X = \mathbb{R}$

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

$= 3x^2 - 4 - 4x - 5 = \boxed{3x^2 - 4x - 9}$

⊙ 2.  $\left(\frac{f}{g}\right)(x)$

$\frac{f(x)}{g(x)}$

$= \boxed{\frac{3x^2 - 4}{4x + 5} \quad x \neq -\frac{5}{4}}$

$4x + 5 \neq 0$

$4x \neq -5$

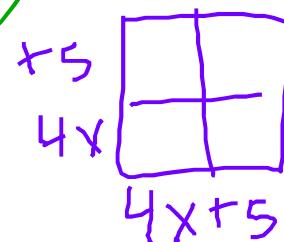
book  $(-\infty, -\frac{5}{4}) \cup (-\frac{5}{4}, \infty)$

Examples: Given  $\rightarrow f(x) = 3x^2 - 4$        $g(x) = 4x + 5$

3.  $f(x) \cdot g(x)$

$$(3x^2 - 4)(4x + 5)$$

$$12x^3 + 15x^2 - 16x - 20$$



4.  $(f \circ g)(x)$

or  $f(g(x)) = 3(4x + 5)^2 - 4$

Start  $\nearrow$        $\nearrow$  Substitute

$$= 3(16x^2 + 40x + 25) - 4$$
$$= 48x^2 + 120x + 71$$



Examples: Given  $\rightarrow f(x) = 3x^2 - 4$        $g(x) = 4x + 5$

5.  $(g \circ f)(x)$

↑  
start

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

$$= 12x^2 - 16 + 5$$

$$= \boxed{12x^2 - 11}$$

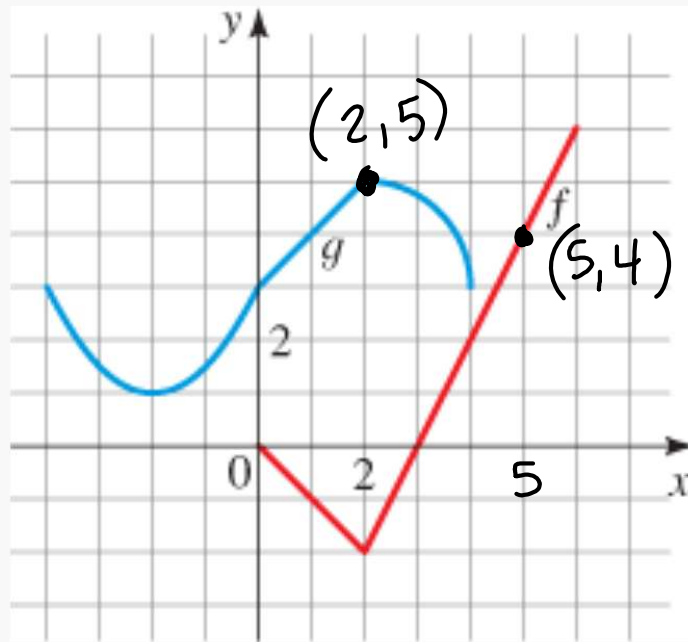
6.  $(g \circ g)(x)$

↑  
start

$$= 4(4x + 5) + 5$$

$$= 16x + 20 + 5$$

$$= \boxed{16x + 25}$$



33.  $f(g(2))$  →  $g(2) = 5$

*solve 1st*

now solve  $f(5) = 4$

therefore

$$f(g(2)) = 4$$