

IM3 Module 7 Study Guide

Name: _____

For #1-10, perform the indicated operation.

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

2. $f(x) = 3x - 1$
 $g(x) = x^2 - x$
Find $\left(\frac{f}{g}\right)(x)$

3) $h(x) = 3x + 3$
 $g(x) = -4x + 1$
Find $(h + g)(10)$

4) $g(a) = 3a + 2$
 $f(a) = 2a - 4$
Find $\left(\frac{g}{f}\right)(3)$

5) $g(x) = 2x - 5$
 $h(x) = 4x + 5$
Find $g(3) - h(3)$

6) $g(a) = 2a - 1$
 $h(a) = 3a - 3$
Find $(g \cdot h)(-4)$

7) $g(t) = t^2 + 3$
 $h(t) = 4t - 3$
Find $(g \cdot h)(-1)$

8) $g(n) = 3n + 2$
 $f(n) = 2n^2 + 5$
Find $g(f(2))$

9. $g(x) = 2x - 2$
 $f(x) = x^2 + 3x$
Find $(g \circ f)(-2 + x)$

10. $g(a) = 2a + 2$
 $h(a) = -2a - 5$
Find $(g \circ h)(-4 + a)$

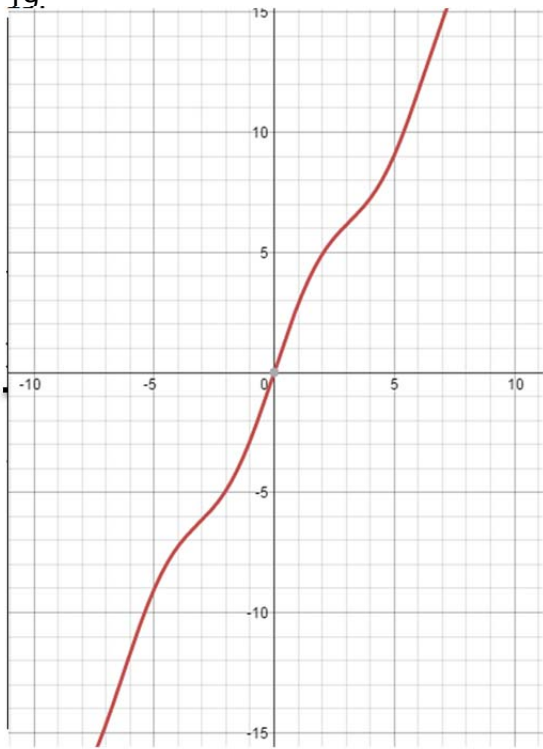
Multiple Choice:

For #11-18, find $(f \circ g \circ h)(x)$

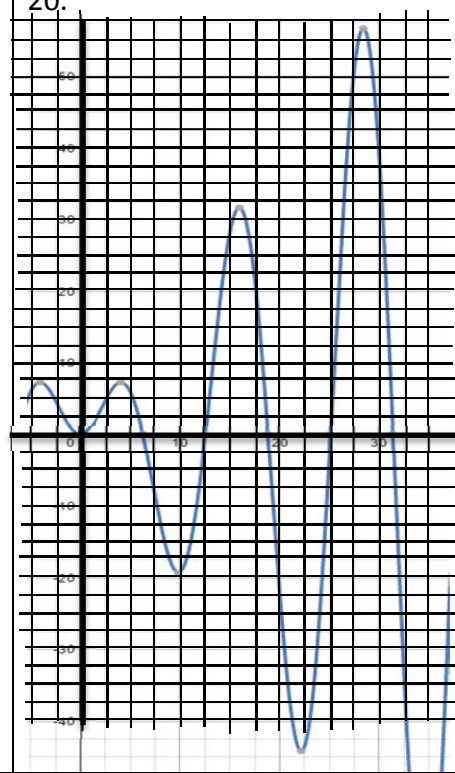
11. $f(x) = x-2$; $g(x) = x^2+1$; $h(x)=x-3$.
- $x^2-6x+10$
 - x^2-6x+8
 - $-x^2-4x+2$
 - x^2-4x+2
12. $f(x) = 2x-4$; $g(x) = x+7$; $h(x)=2x^2+3x+2$.
- $2x^2+6x+11$
 - $2x^2-6x+14$
 - $4x^2+6x+14$
 - $2x^2+6x-14$
13. $f(x) = 3x^2-7$; $g(x) = x+8$; $h(x)=-4-x$.
- $-3x^2-48x-191$
 - $3x^2+48x+41$
 - $-5-3x^2$
 - $3x^2-24x+41$
14. $f(x) = x-4$; $g(x) = 3x^2+5x+7$; $h(x)=5-x$.
- $-3x^2+19x-30$
 - $3x^2-19x+40$
 - $3x^2-19x+35$
 - $3x^2-35x+103$
15. $f(x) = 2x+1$; $g(x) = x^2+4x+5$; $h(x)=5x$.
- $50x^2+40x+5$
 - $50x^2+40x+11$
 - $x^2+11x+6$
 - $x^2+40x+11$
16. $f(x) = x^2+9x+2$; $g(x) = x-7$; $h(x)=x+5$.
- $x^2+5x+14$
 - x^2+5x-6
 - $x^2+5x-12$
 - x^2+9x
17. $f(x) = x+3$; $g(x) = 5x-9$; $h(x)=x^2-8x+7$.
- $5x^2-40x+29$
 - $5x^2-14x-23$
 - $-5x^2-14x-23$
 - $5x^2+40x-26$
18. $f(x) = x+8$; $g(x) = x^2+1$; $h(x)=3x^2$.
- $9x^4-9$
 - $9x^4+9$
 - $9x^4+1$
 - $4x^2+x+9$

For #19-23, match each graph with the correct equation.

19.



20.



a.) $f(x) = 2x \cdot \sin\left(\frac{1}{2}x\right)$

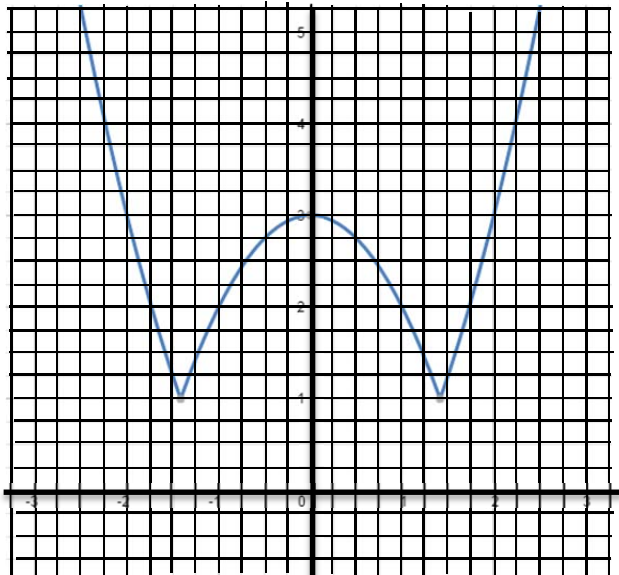
b.) $g(x) = |x^2 - 2| + 1$

c.) $h(x) = 5|\sin x| - 3$

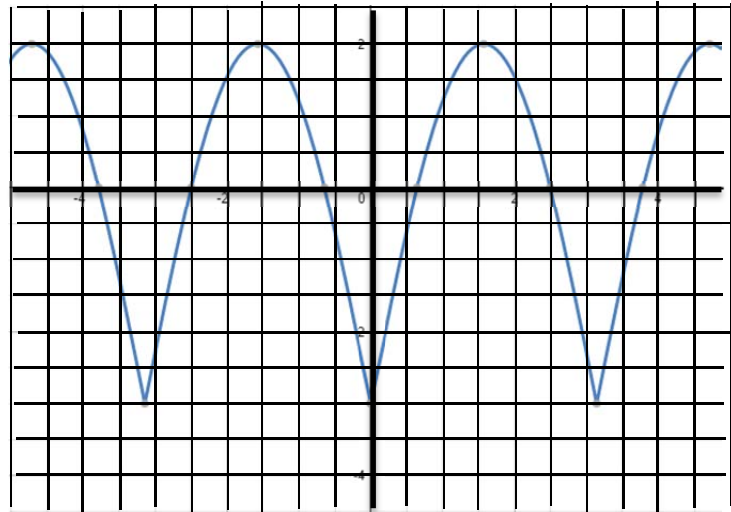
d.) $j(x) = 2x + \sin x$

e.) $k(x) = 4(0.7)^x \cdot \sin(2x)$

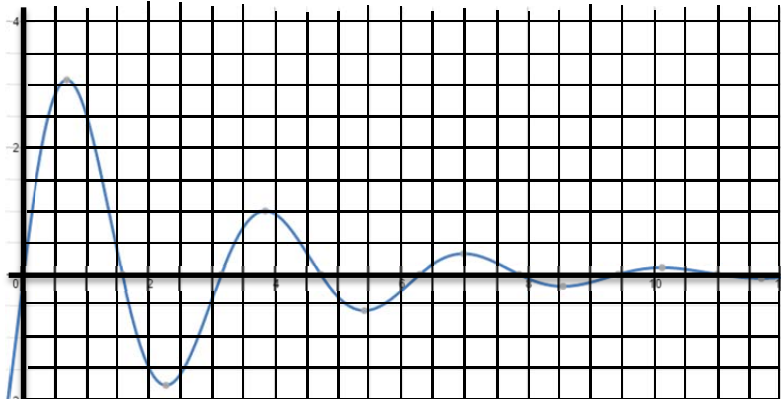
21.



22.



23.



For #24-28, create a composite function given the components below.

$$f(x) = -3x - x$$

$$g(x) = |4x + 1|$$

$$h(x) = x^2 - 2$$

$$k(x) = 3x$$

$$m(x) = -x^3 - 3$$

$$p(x) = \sqrt[3]{x}$$

24. $y = \sqrt[3]{(3x)^2 - 2}$

25. $y = -3(3x) - 3x$

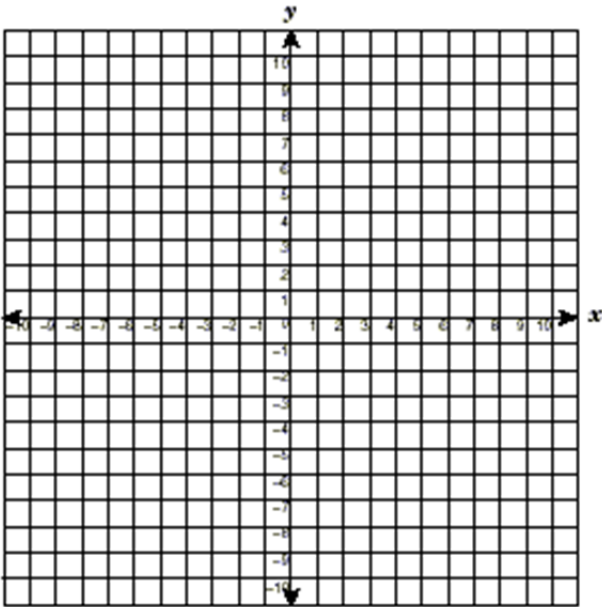
26. $y = |4(-(x^2 - 2)^3 - 3) + 1|$

27. $y = -x - 3$

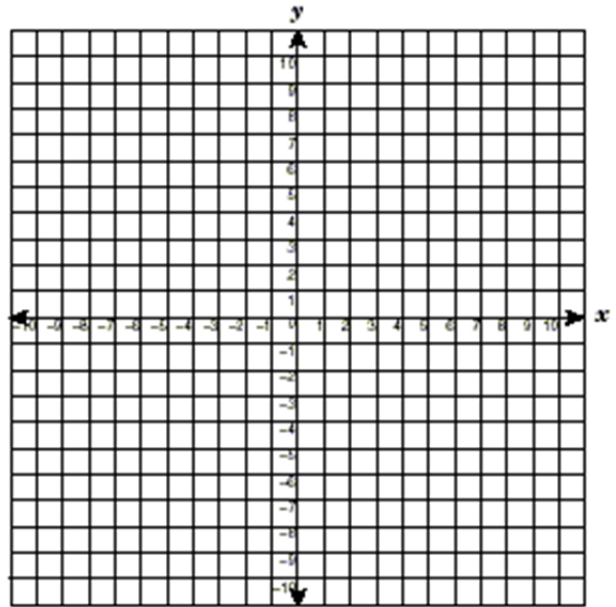
28. $y = -3|4\sqrt[3]{x} + 1| - |4\sqrt[3]{x} + 1|$

For #29-32, sketch the graph of the following functions:

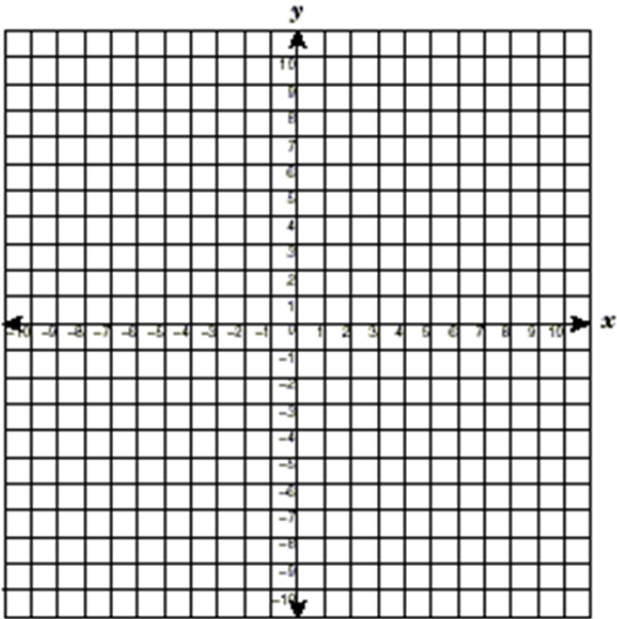
29. $f(x) = 2x + 1$ and $g(x) = \cos x$



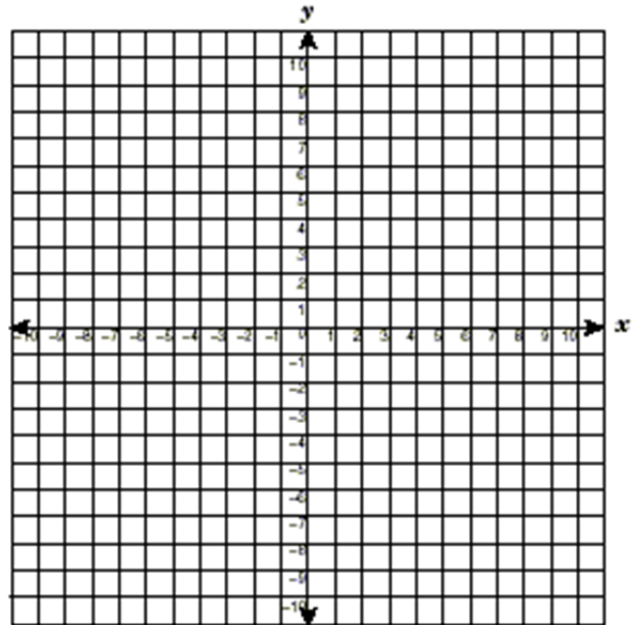
30. $f(g(x))$



31. $(f + g)(x)$



32. $(f - g)(x)$



For #33-39, use the table to find the indicated function values.

x	$f(x)$	$g(x)$
-2	0	-8
-1	5	4
0	2	-1
1	-1	0
2	3	2
3	12	6

33. $f(g(-2))$

34. $f(g(0))$

35. $g(f(-2))$

36. $g(f(0))$

37. $g(f(-1))$

38. $g(g(-2))$

39. $f(f(2))$

For #40-43, use the graph at the right to find the indicated values.

40. $h(x) = f(g(x))$
Find $h(-3.14)$

41. $h(x) = f(g(x))$
Find $h(1.57)$

42. $k(x) = g(f(x))$
Find $k(8)$

43. $m(x) = f(f(x))$
Find $m(-2)$

