Bell Ringer Do #2 and #4

Thursday 12/6

Simplify the following expressions.

1. $\dfrac{6x^{\frac{1}{2}}yz^{2}}{12x^{-1}y^{-\frac{2}{3}}z^{5}}$

2. $\sqrt[3]{27x^{3}y}$

$\sqrt[3]{3}\sqrt[3]{9}$

$\sqrt[3]{3}$

$3x\sqrt[3]{3xy}$

3. $(3+2i)+(5-6i)$

4. $(2-i)(6+2i)$

$12-2i-2i^{2}$

$12-2i+2$

$14-2i$

$-i$

6	$+2i$
12	$4i$
$-6i$	$-2i^{2}$

correct 4.6 piecewise review (blue)

Name: _____

4.6 Piecewise Function Review

Evaluate the function for the given value of x.

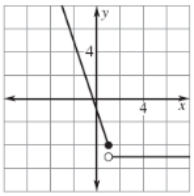
$f(x) = \begin{cases} 3, & \text{if } x \le 0 \\ 2, & \text{if } x > 0 \end{cases}$ $g(x) = \begin{cases} x + 5, & \text{if } x \le 3 \\ 2x - 1, & \text{if } x > 3 \end{cases}$ $h(x) = \begin{cases} \frac{1}{2}x - 4, & \text{if } x \le -2 \\ 3 - 2x, & \text{if } x > -2 \end{cases}$

1. $f(2)$
2. $f(-4)$
3. $f(0)$
4. $f\left(\frac{1}{2}\right)$
5. $g(7)$
6. $g(0)$
7. $g(-1)$
8. $g(3)$
9. $h(-4)$
10. $h(-2)$
11. $h(-1)$
12. $h(6)$

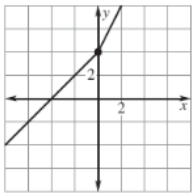
Match the piecewise function with its graph.

13. $f(x) = \begin{cases} x - 4, & \text{if } x \le 1 \\ 3x, & \text{if } x > 1 \end{cases}$
14. $f(x) = \begin{cases} x + 4, & \text{if } x \le 0 \\ 2x + 4, & \text{if } x > 0 \end{cases}$
15. $f(x) = \begin{cases} 3x - 2, & \text{if } x \le 1 \\ x + 2, & \text{if } x > 1 \end{cases}$
16. $f(x) = \begin{cases} 2x + 3, & \text{if } x \ge 0 \\ x + 4, & \text{if } x < 0 \end{cases}$
17. $f(x) = \begin{cases} 3x - 1, & \text{if } x \ge -1 \\ -5, & \text{if } x < -1 \end{cases}$
18. $f(x) = \begin{cases} -3x - 1, & \text{if } x \le 1 \\ -5, & \text{if } x > 1 \end{cases}$

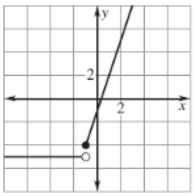
A.



B.



C.



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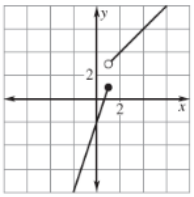

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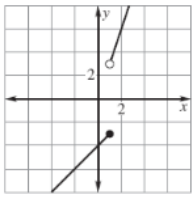

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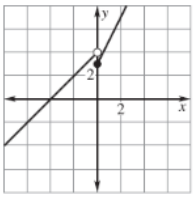
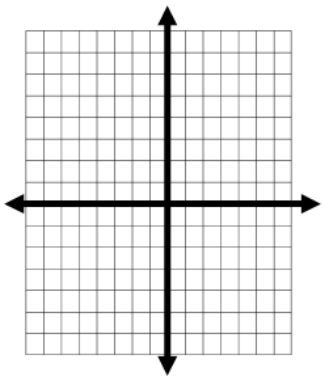
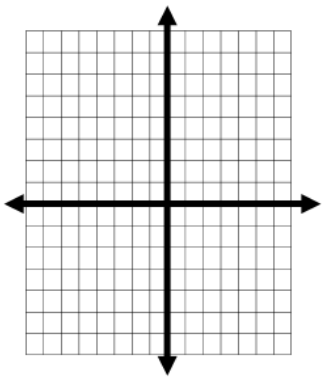


Graph each piecewise function.

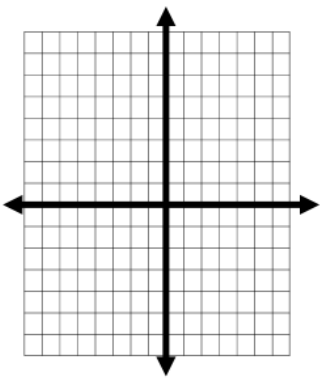
19. $f(x) = \begin{cases} x + 3, & \text{if } x \le 0 \\ 2x, & \text{if } x > 0 \end{cases}$



20. $f(x) = \begin{cases} x + 1, & \text{if } x < 0 \\ -x + 1, & \text{if } 0 \le x \le 2 \\ x - 1, & \text{if } x > 2 \end{cases}$



21. $f(x) = \begin{cases} 2, & \text{if } x \le -3 \\ -1, & \text{if } -3 < x < 3 \\ 3, & \text{if } x \ge 3 \end{cases}$

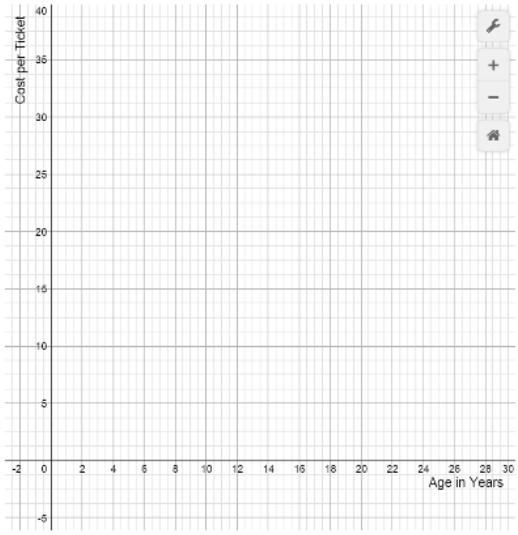


22. The admission rates at an amusement park are as follows:

Children 5 years old and under: Free
Children between 5 years and 12 years, inclusive: $10.00
Children between 12 years and 18 years, inclusive: $25.00
Adults: $35.00

(a) Write a piecewise function that gives the admission price for a given age.

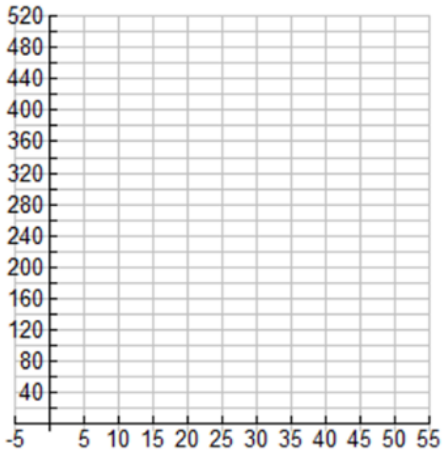
(b) Graph the piecewise function.



23. Graph the relationship between the quantity of bracelets sold (per tube) and the purchasing price (up to 55 tubes) on the grid below, then write the piecewise function.

22" Green Supreme Glow Necklaces (6mm)(bulk packed)

50 piece tube ($0.49 per piece) 1-11 tubes	$24.50
Per tube ($0.39 per piece) 12-23 tubes	$19.50
Per tube ($0.29 per piece) 24-47 tubes	$14.50
Per tube ($0.19 per piece) 48+ tubes	$9.50



$f(x) =$ { }

Name: _____ Hr: _____

Sec. 4.6

Evaluate the function for the given value of x.

$f(x) = \begin{cases} 3, & \text{if } x \le 0 \\ 2, & \text{if } x > 0 \end{cases}$ $g(x) = \begin{cases} x + 5, & \text{if } x \le 3 \\ 2x - 1, & \text{if } x > 3 \end{cases}$ $h(x) = \begin{cases} \frac{1}{2}x - 4, & \text{if } x \le -2 \\ 3 - 2x, & \text{if } x > -2 \end{cases}$

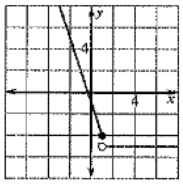
+1/2

1. $f(2)$ 2
2. $f(-4)$ 3
3. $f(0)$ 3
4. $f\left(\frac{1}{2}\right)$ 2
5. $g(7)$ 13
6. $g(0)$ 5
7. $g(-1)$ 4
8. $g(3)$ 8
9. $h(-4)$ −6
10. $h(-2)$ −5
11. $h(-1)$ 5
12. $h(6)$ −8

Match the piecewise function with its graph.

13. $f(x) = \begin{cases} x - 4, & \text{if } x \le 1 \\ 3x, & \text{if } x > 1 \end{cases}$ E
14. $f(x) = \begin{cases} x + 4, & \text{if } x \le 0 \\ 2x + 4, & \text{if } x > 0 \end{cases}$ B
15. $f(x) = \begin{cases} 3x - 2, & \text{if } x \le 1 \\ x + 2, & \text{if } x > 1 \end{cases}$ D
16. $f(x) = \begin{cases} 2x + 3, & \text{if } x \ge 0 \\ x + 4, & \text{if } x < 0 \end{cases}$ F
17. $f(x) = \begin{cases} 3x - 1, & \text{if } x \ge -1 \\ -5, & \text{if } x < -1 \end{cases}$ C
18. $f(x) = \begin{cases} -3x - 1, & \text{if } x \le 1 \\ -5, & \text{if } x > 1 \end{cases}$ A

A.



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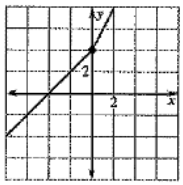

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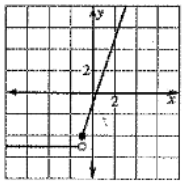

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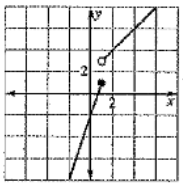

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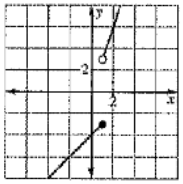

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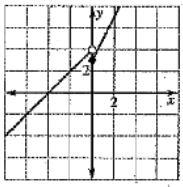
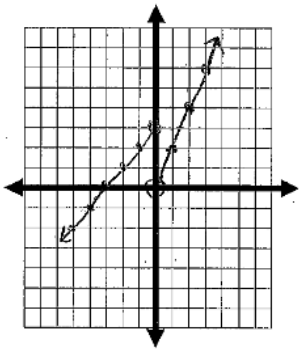


Graph the function.

19. $f(x) = \begin{cases} x + 3, & \text{if } x \le 0 \\ 2x, & \text{if } x > 0 \end{cases}$



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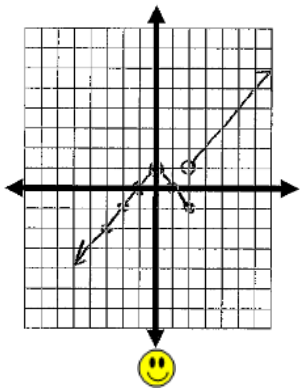

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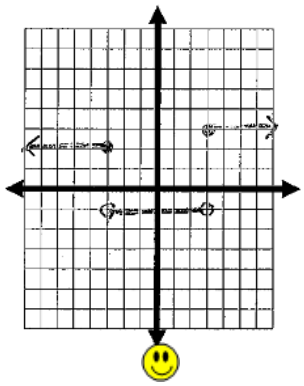

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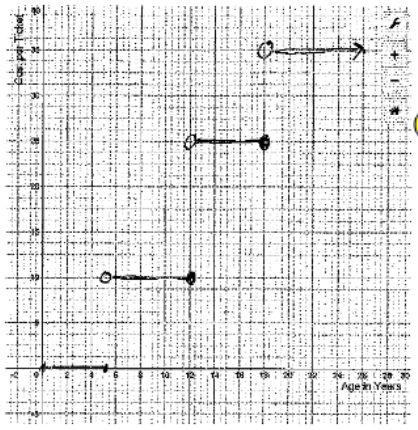
Adults: $35.00

(a) Write a piecewise function that gives the admission price for a given age.

$$f(x) = \begin{cases} 0 & 0 \le x \le 5 \\ 10 & 5 < x \le 12 \\ 25 & 12 < x \le 18 \\ 35 & x > 18 \end{cases}$$

(b) Graph the piecewise function.



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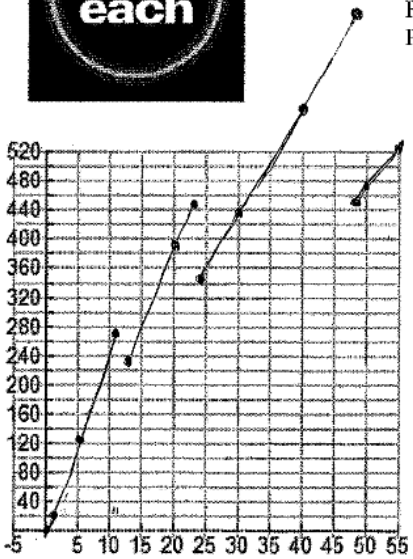


$y - 390 = 19.5(x - 20)$

$y - 390 = 19.5x - 390$

1 pt.

$$f(x) = \begin{cases} 24.5x & 0 \le x \le 11 \\ 19.50x & 12 \le x \le 23 \\ 14.50x & 24 \le x \le 47 \\ 9.50x & x \ge 48 \end{cases}$$

due tomorrow 4.7 Function Combinations ws

QUIZ 4B and 4C tomorrow!

Composite Functions

f(x) = 5x - 4 g(x) = x + 3

f(2)

$f(g(x))$

or

$(f \circ g)(x)$

"x"

$5(x+3)-4$

$5x+15-4$

$5x+11$

Composite Functions

f(x) = 5x - 4 g(x) = x + 3

$g(f(x))$ = 5x - 1

or

$(g \circ f)(x)$ = 5x - 1

(5x - 4) + 3

5x - 4 + 3

5x - 1

Composite Functions

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

$f(g(3)) = 26$

or

$(f \circ g)(3)$

$g(3) = 3 + 3 = 6$

$f(6) = 5(6) - 4 = 30 - 4 = 26$

$5(3 + 3) - 4$

Composite Functions

f(x) = 5x - 4 g(x) = x + 3

$g(f(10))$

or

$(g \circ f)(10)$

$(5(10)-4)+3$

$(50-4)+3$

$46+3$

49

WHITEBOARD PRACTICE

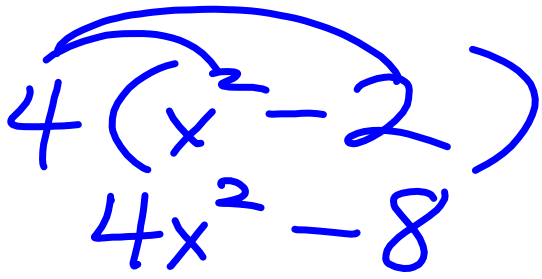
$f(x) = x^2 - 2$ $g(x) = 4x$

Find $(f \circ g)(x)$ $(4x)^2 - 2$

$16x^2 - 2$

$f(x) = x^2 - 2$ $g(x) = 4x$

Find $g(f(x))$



Review from yesterday...

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

$(f + g)(x) = 5x - 4 + x + 3$ $(f + g)(2) = 6(2) - 1$

$6x - 1$ $12 - 1 = 11$

$f(x) = x^2 - 2$ $g(x) = 4x$

Find $(f \circ g)(5)$

$(4(5))^2 - 2$

$20^2 - 2$

$400 - 2 = 398$

$f(x) = 2x + 4$ $\quad -22+4=-18$

$g(x) = \frac{3x-1}{2}$ $\quad \frac{-21-1}{2} = \frac{-22}{2} = -11$

Find $f(g(-7))$

$f(-11)$

Review from yesterday...

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

$(f - g)(x) =$

$(5x-4)-1(x+3)$

$-x-3$

$4x-7$

$(f - g)(5) =$

$4(5)-7$

$20-7$

13

$f(x) = 2x + 4$ $g(x) = \frac{3x - 1}{2}$

Find $(g \circ f)(1)$

$f(x) = x + 9$ $g(x) = 2x^2$

Find $g(f(x))$

$2(x+9)^2$

$2(x+9)(x+9)$

$x^2+9x+9x+81$

$2(x^2+18x+81) = 2x^2+36x+162$

Review from yesterday...

f(x) = 5x - 4 g(x) = x + 3

$(f \cdot g)(x)$

$(f \cdot g)(2)$

$f(x) = x + 9$ $g(x) = 2x^2$

Find $g(f(0))$

Review from yesterday...

f(x) = 5x - 4 g(x) = x + 3

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

$\left(\frac{f}{g}\right)(-2)$

due Monday: #1-4 all, #6-30 evens

Name: _____ Hour: _____

4.8 Composition and Combinations of Functions

Find $(f \circ g)(x)$ of the following functions:

1. $f(x)=2x-3$, $g(x)=3x$

2. $f(x)=\frac{1}{2}x-3$, $g(x)=\frac{1}{4}x$

Find $(g \circ f)(x)$ of the following functions:

3. $f(x)=x^2$, $g(x)=5x$

4. $f(x)=-3x+3$, $g(x)=6x$

Given the following functions, find each composite function value.

$f(x)=-\frac{1}{2}x+4$ $g(x)=x^2-1$ $h(x)=2x+5$

5. $(h \circ g)(-1)$

6. $(f \circ g)(-6)$

7. $(g \circ g)(-3)$

8. $g(f(-6))$

9. $(h \circ f)(5)$

10. $(h \circ h)\left(\frac{1}{2}\right)$

11. $(f \circ f)(2)$

12. $f(g(x))$

13. $(f \circ h)(1)$

Given: $f(x)=2x-5$ $g(x)=3x^2$ $h(x)=\frac{3x-1}{2}$ $k(x)=x^2-3x+2$

Find the following:

14. $f(-4)$

15. $(f\circ g)(-1)$

16. $(g+k)(2)$

17. $(k-f)(x)$

18. $(f\cdot g)(6)$

19. $f(g(x))$

20. $\left(\frac{g}{k}\right)(0)$

21. $(h\circ k)(-2)$

22. $\frac{f(1)+k(-1)}{3}$

23. $(f+k)(x)$

24. $(k\circ g)(x)$

25. $(h+g)(1)$

26. $\frac{(f-k)(0)}{2}$

27. $g(h(0))$

28. $\left(\frac{f}{g}\right)(x)$

29. $(g\cdot k)(x)$

30. $\frac{(f\circ k)(0)}{6}$