1.) $(-5)^2 - 4 \times (6 \div ((-7+8)) \times 3$

$(-5)^2 - 4 \times 6 \times 3$

$25 - 4 \times 6 \times 3$

$25 - 24 \times 3$

$25 - 72$

-47

6.) $\left((-3) \times (10 + (-7))\right)^2 \div 3 - (-9)^2$

$(-3 \times 3)^2 \div 3 - (-9)^2$

$81 \div 3 - 81$

$27 - 81$

-54

$$(-9+7)^3 \times (-5) \div ((4-(-6)) \times 2)$$

$$(-2)^3 \times (-5) \div (10 \times 2)$$

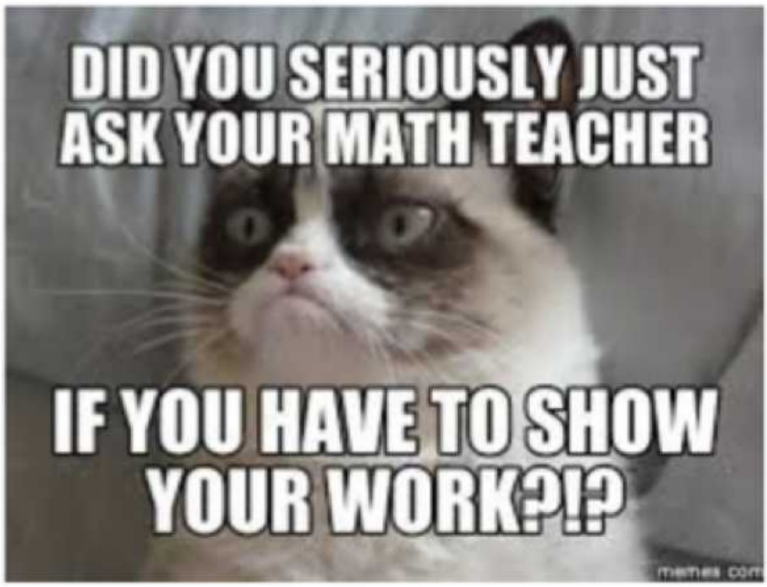
$$-8 \times (-5) \div 20$$

$$40 \div 20$$

$$2$$

Algebra 2 - Class Notes

Evaluating Functions
(Numbers from a Graph)
&
Function Operations



What does the expression

$f(4) = -7$ mean?

When you plug in 4 to f(x), you get -7.

Use the following functions to evaluate # 1 — 6.

$f(x) = x^2 - 3x - 1$

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

$h(x) = |7x - 3|$

1) f(3)

$f(x) = x^2 - 3x - 1$

$f(3) = (3)^2 - 3(3) - 1$

$= 9 - 9 - 1$

$= -1$

Use the following functions to evaluate # 1 — 6.

$f(x) = x^2 - 3x - 1$

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

$h(x) = |7x - 3|$

2) h(10)

$|7 \cdot 10 - 3|$

$|70 - 3|$

$|67|$

67

Use the following functions to evaluate # 1 — 6.

$f(x) = x^2 - 3x - 1$

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

$h(x) = |7x - 3|$

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

$= \frac{1}{4} - \frac{3 \times 2}{2 \times 2} - 1 \cdot \frac{4}{4}$

$= \frac{1}{4} - \frac{6}{4} - \frac{4}{4} = \frac{-9}{4}$

Use the following functions to evaluate # 1 — 6.

$f(x) = x^2 - 3x - 1$

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

$h(x) = |7x - 3|$

4) $g\left(-\frac{1}{4}\right) = \frac{1}{2}\left(-\frac{1}{4}\right) - \frac{2}{3}$

$= -\frac{1 \times 3}{8 \times 3} - \frac{2 \times 8}{3 \times 8} = \frac{-3}{24} - \frac{16}{24}$

$\frac{-19}{24}$

Use the following functions to evaluate # 1 — 6.

$f(x) = x^2 - 3x - 1$

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

$h(x) = |7x - 3|$

5) $h(2.5) = |7 \cdot 2.5 - 3|$

$= |17.5 - 3|$

$= |14.5|$

14.5

Use the following functions to evaluate # 1 — 6.

$f(x) = x^2 - 3x - 1$

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

$h(x) = |7x - 3|$

$5 - \frac{1}{4}$

$4\frac{3}{4}$

6) $g(12) = \frac{1}{2}(12) - \frac{2}{3}$

$= 6 - \frac{2}{3}$

$= \frac{18}{3} - \frac{2}{3} = \frac{16}{3}$ or $5\frac{1}{3}$

Function Operations

Addition	$f(x)+g(x)=(f+g)(x)$
Subtraction	$f(x)-g(x)=(f-g)(x)$
Multiplication	$f(x)g(x)=(fg)(x)$
Division	$\frac{f(x)}{g(x)}=\left(\frac{f}{g}\right)(x)$

Use the following functions to evaluate #7-15.

$f(x) = 3x^2 - 8$	$g(x) = 4x - 1$	$h(x) = 2x^2 + 5$

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

$3x^2 + 4x - 9$

Use the following functions to evaluate #7-15.

$f(x) = 3x^2 - 8$	$g(x) = 4x - 1$	$h(x) = 2x^2 + 5$

~~8~~ 2. h(x) – f(x)

$(2x^2+5)-(3x^2-8)$

$2x^2+5-3x^2+8$

$-x^2+13$

Use the following functions to evaluate #7-15.

$f(x) = 3x^2 - 8$	$g(x) = 4x - 1$	$h(x) = 2x^2 + 5$

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

$3x^2 - 8 - (4x - 1)$

$3x^2 - 8 - 4x + 1$

$3x^2 - 4x - 7$

Use the following functions to evaluate #7-15.

$f(x) = 3x^2 - 8$	$g(x) = 4x - 1$	$h(x) = 2x^2 + 5$

~~10~~ 4. $(g(x) - f(x) + h(x)$

$(4x-1) - (3x^2-8) + (2x^2+5)$

$4x - 1 - 3x^2 + 8 + 2x^2 + 5$

$-x^2 + 4x + 12$

Use the following functions to evaluate #7-15.

$f(x) = 3x^2 - 8$	$g(x) = 4x - 1$	$h(x) = 2x^2 + 5$

5

11. $g(x) \bullet h(x)$

$(4x-1)(2x^2+5)$

$8x^3+20x-2x^2-5$

Use the following functions to evaluate #7-15.

$x^m \cdot x^n = x^{m+n}$

$f(x) = 3x^2 - 8$	$g(x) = 4x - 1$	$h(x) = 2x^2 + 5$

12. $h(x) \bullet f(x)$

$(2x^2+5)(3x^2-8)$

$6x^4 - \underline{16x^2} + \underline{15x^2} - 40$

$6x^4 - x^2 - 40$

Use the following functions to evaluate #7-15.

$f(x) = 3x^2 - 8$	$g(x) = 4x - 1$	$h(x) = 2x^2 + 5$

7) $(f + g)(3) = f(3) + g(3)$

$= 3 \cdot 3^2 - 8 + 4 \cdot 3 - 1$

$= 19 + 11$

30

Use the following functions to evaluate #7-15.

$f(x) = 3x^2 - 8$	$g(x) = 4x - 1$	$h(x) = 2x^2 + 5$

~~14~~ 8. $(g - h)(-2)$

$(4x-1)-(2x^2+5)$

$-2x^2+4x-6$

$-2(-2)^2+4(-2)-6$

$-8-8-6$

-22

$g(-2)-h(-2)$

$4(-2)-1-(2(-2)^2+5)$

$-9-(13)$

-22

Use the following functions to evaluate #7-15.

$f(x) = 3x^2 - 8$	$g(x) = 4x - 1$	$h(x) = 2x^2 + 5$

9. $(g \bullet h)(3)$

$g(3) \cdot h(3)$

$(11) \cdot (2 \cdot 3^2 + 5)$

$(11)(23)$

253

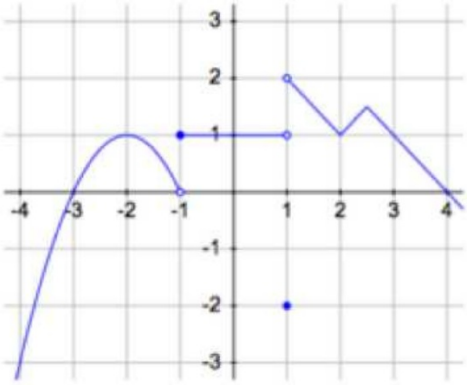
$f(x) = y$

When looking at a graph:

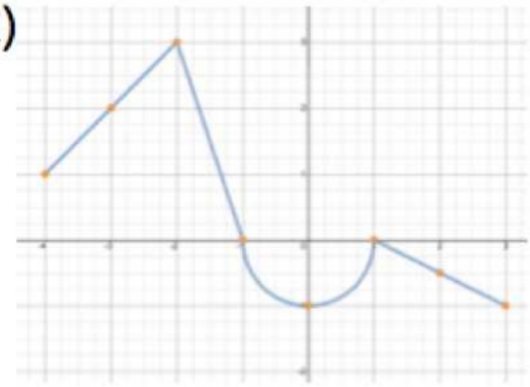
1. Find the x-value given.
2. Ask: Where does the function exist at that x-value?
3. That y-value is the answer.

Use the following graphs to answer #16 - 25.

f(x)



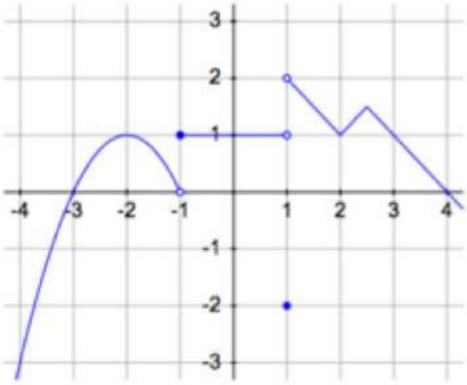
g(x)



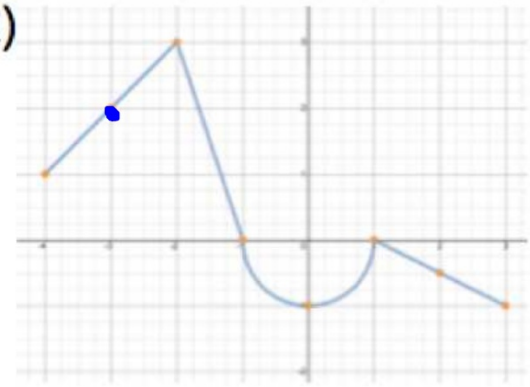
16. f(2) = 1	17. g(1) = 0	18. f(-3) = 0

Use the following graphs to answer #16 - 25.

f(x)



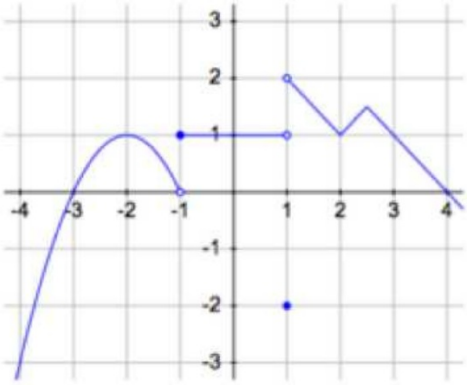
g(x)



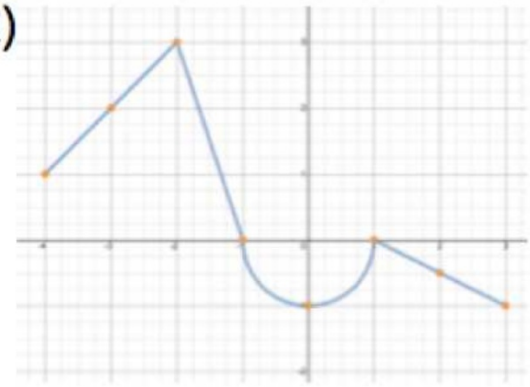
~~19~~. f(4) = 0 16.	~~20~~. g(-3) = 2 17.

Use the following graphs to answer #16 - 25.

f(x)



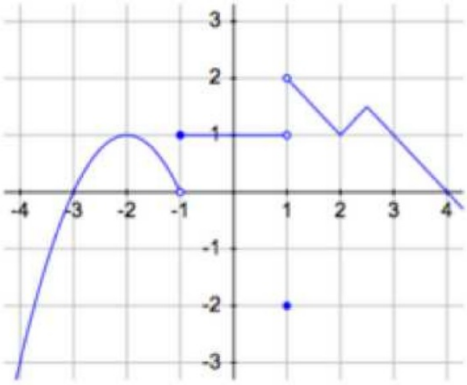
g(x)



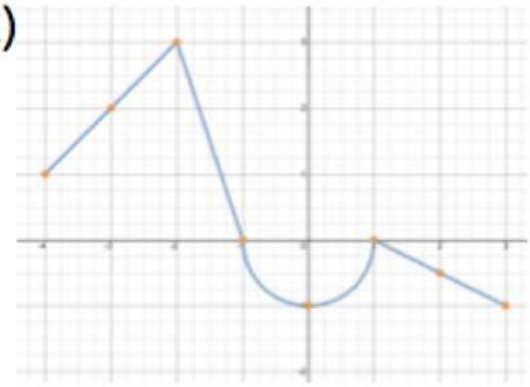
21. f(3) – g(3)	22. g(-1) + f(-2)	23. f(-1) – g(0)
$1-(-1)$	$0+1$	$1-(-1)$
2	1	2

Use the following graphs to answer #16 - 25.

f(x)



g(x)



24. 10f(1) $10(-2) = -20$	25. f(4) + f(-4) $0 + -3 = -3$

D+R: 2, 3, 6, 8

$(-12)^2$

Evaluate

1.) $14+6\cdot 9\div 3-8$

$14+54\div 3-8$

$14+18-8$

24

2.) $-12^2\div 4-3\cdot 2^4$

$-144\div 4-3\cdot 16$

$-36-48$

-84

3.) $6\cdot 8-(4^2+2)+72\div 8$

$48-(18)+9$

39