Outcome 8a Review

Level 2

Determine if a relation is linear

-From a table or set of ordered pairs, the domain must increase/decrease by an equal amount and the rang must increase or decrease by an equal amount

-From an equation, the degree (largest exponent) must be equal to one

-From a graph, the function must be a straight line with no bends or curves

Example 1: Determine is the following is linear or non-linear

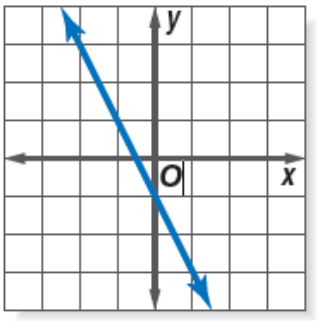
a.

x	0	5	10	15
y	20	16	12	8

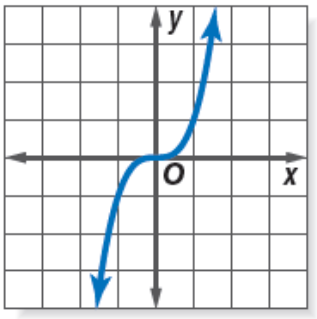
b.

x	0	2	4	6
y	0	2	8	18

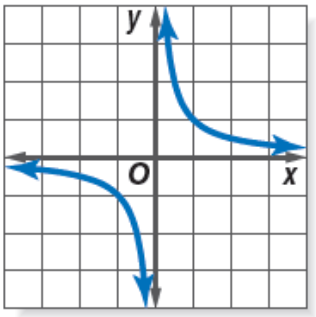
c.



d.



e.



f. $y = 2x^3 + 1$

g. $y = 3x$

h. $y = \frac{x}{5}$

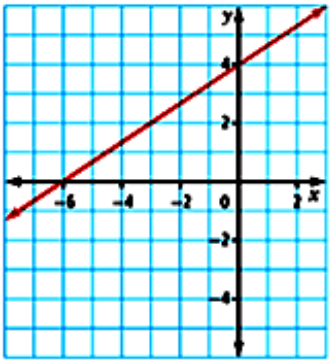
g. $\{(-3, 10), (-1, 9), (1, 7), (3, 4), (5, 0)\}$

h. $\{(3, 4), (5, 7), (7, 10), (9, 13), (11, 16)\}$

Determining intercepts

1. **The x-intercept (horizontal intercept) is the point in which a function crosses the x axis. It comes in the form (x, 0)**
2. **The y-intercept (vertical intercept) is the point in which a function crosses the y-axis. It comes in the form (0,y)**

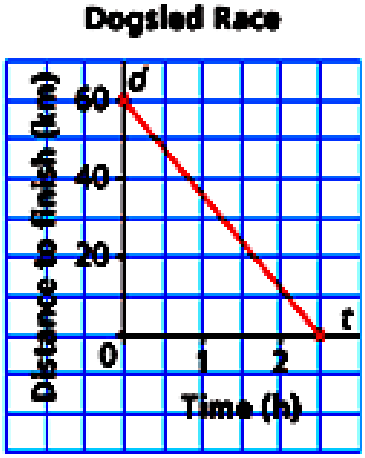
Example 2: Determine the x and y intercepts of the following



The graph crosses the x axis at -6 so the x intercept is (-6,0)

The graph crosses the y axis at 4 so the y intercept is (0,4)

This graph shows the distance to the finish line, d kilometers, as a function of time, t hours, for one dogsled in a race near Churchill, Manitoba.

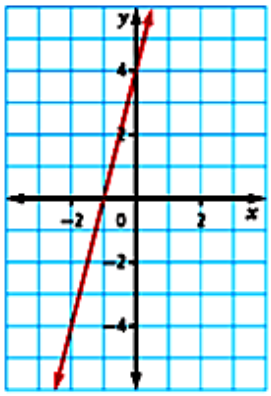


This graph has a horizontal intercept at (3,0). Since the x-axis is in hours, it means that it took 3 hours to finish the race

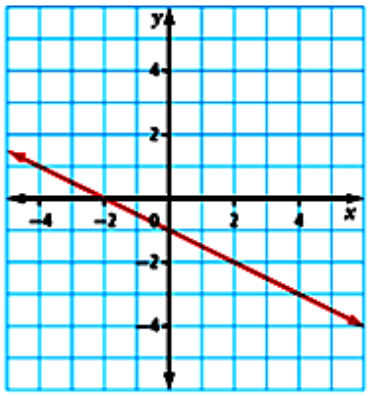
This graph has a vertical intercept at (0,60). Since the y-axis is in km, it means that the race started 60 km from the finish line.

2. Determine the x and y intercepts of the following.

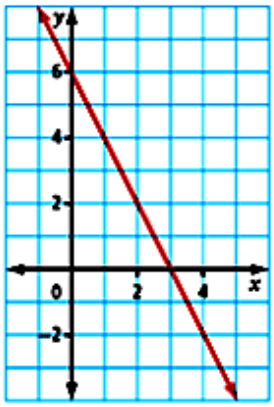
a)



b)

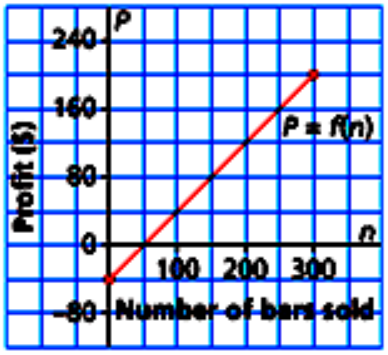


c)

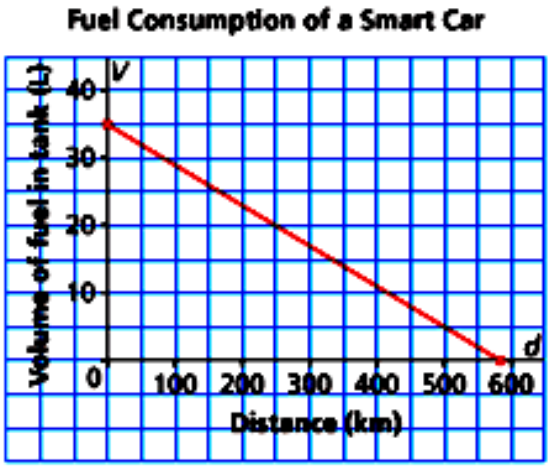


3. Determine the x and y intercepts of the following. What does this represent?

Northlands School Outdoor Club had a fundraiser to help purchase snowshoes. The club had 300 power bars to sell. This graph shows the profit made from selling power bars.



This graph shows the fuel consumption of a smart car, based on the number of kilometers driven



Level 3

Function notation

- **Remember: y = f(x)**

Example 3

If f(x) = 2x – 5, determine

a) f(3)

In this question, the x is Replaced with 3

f(3) = 2(3) – 5
f(3) = 6-5
f(3) = 1

b) f(x)= 7

in this question, y = 7, so we set it up as follows

2x – 5 = 7
+5 +5
2x = 12
2 2
x = 6

4. Determine the following if f(x) = -3x + 7
   a) f(4)
   b) f(-1)
   c) f(x) = -2
   d) f(x) = 16

Recall: x –intercepts is where x = 0
Recall: y-intercepts is where y = 0

Example 4: Determine the x and y intercepts of the following: x – 3y + 9 = 0

To find the x intercept, may y = 0
X - 3(0) + 9 = 0
x – 0 + 9 = 0
x + 9 = 0

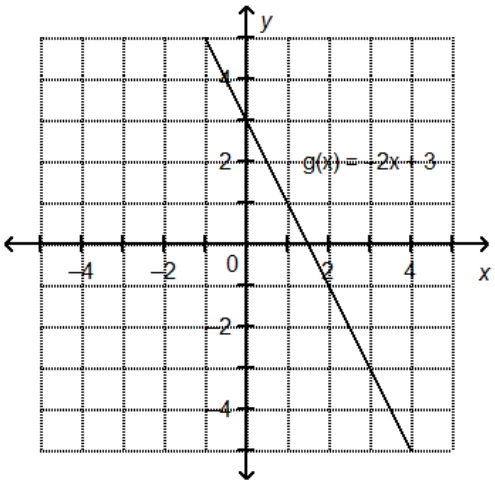
Now get x by itself
X + 9 = 0
- 9 - 9
X = -9

to find the y intercept, make x = 0
0 – 3y + 9 = 0
-3y + 9 = 0

Now get y by itself
- 3y + 9 = 0
-9 -9
-3y = -9
-3 -3
Y = 3

5. Find the x and y-intercepts of the following
   a) -2x + 3y = 12
   b) 3x – 5y + 15 = 0

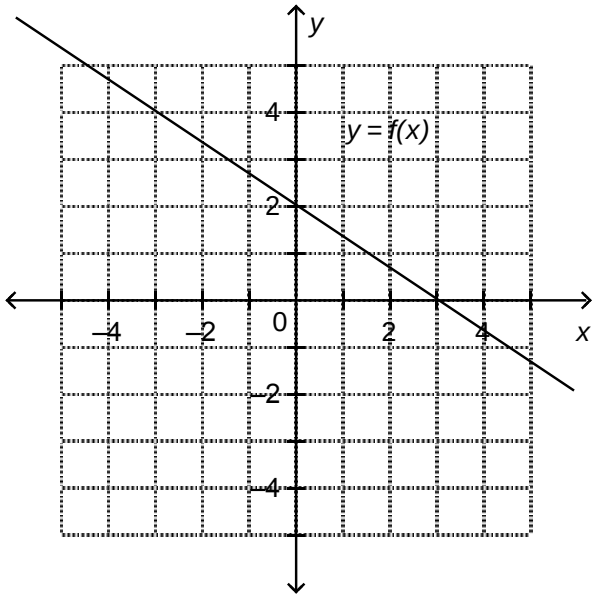
Recall that y = f(x)
Example 5
Using the graph below, determine



a) f(2)
This means that x = 2. So find the Point on the line that has an x of 2 This point is (2, -1) so the solution Is -1.

b) f(x) = 5
This means that y = 5. So find the point that has a y coordinate of 5. That point is (-1. 5) so the solution is -1

6. For the following graph determine
   a) f(0)
   b) f(-3)
   c) x, when f(x) = 0
   d) x, when f(x) = 3



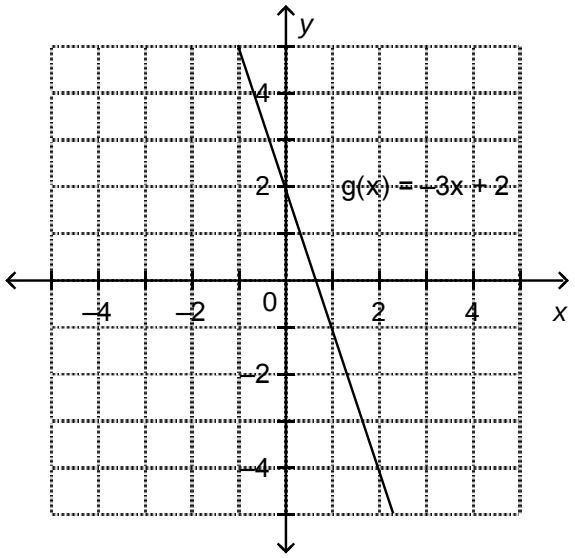
7. For the following graph determine

a) f(1)

b) f(2)

c) x, when f(x) = 2

d) x, when f(x) = 5



Remember to use your notes, textbook, and old reviews to look for level 4 questions.