BECA / IB Math 01-Linear functions   Name:
8 October 2021

Quiz: I can model with linear functions

Equations of a straight line: $f(x) = mx + c$, $ax + by + d = 0$, $(y - y_1) = m(x - x_1)$

Gradient: $m = \dfrac{y_2 - y_1}{x_2 - x_1}$

1. Perform each calculation, writing down the full calculator display and then rounding to the *nearest hundredth.*

   (a) $A = 15.944732$

   (b) $W = 3.4 \times 9.8 \times 4.3 \times 0.15$

   (c) $V = \frac{1}{3}\pi(3.4)^2(6.1)$

   (d) $P = 8.6 + \frac{1}{2}\pi(8.6)$

   (e) $V = 199.19711$

   (f) $W = \frac{1}{3}(13)3.3^2 \times 1.175$

   (g) $V = \frac{1}{3}\pi(12.4)^2(8.1)$

   (h) $P = 12 + \frac{1}{4}\pi(12)$

2. Simplify each radical.

    (a) $\sqrt{50}$

    (b) $\sqrt{18}$

    (c) $\sqrt{27}$

    (d) $\sqrt{24}$

BECA / IB Math 01-Linear functions   Name:

8 October 2021

3. A linear function f is graphed below.   [4]

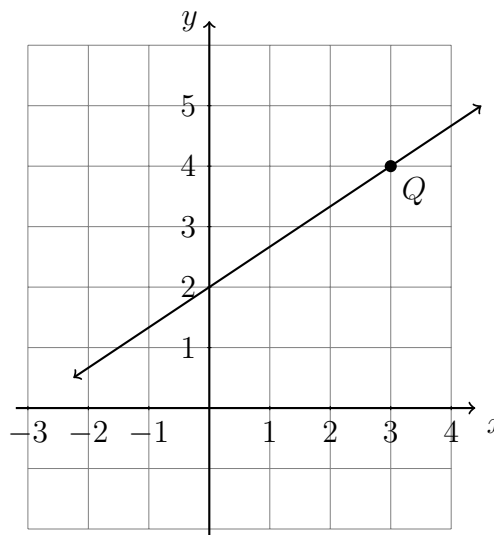   (a) Write down it's slope.

      $m =$

   (b) Write down it's y-intercept.

      $b =$

   (c) Write down the equation of the line.

   (d) State the coordinates of the point Q.

4. Write the linear equation $y + 5 = 2(x - 4)$ in the form $y = mx + c$.   [2]

5. A line has a gradient (slope) of $-\dfrac{2}{3}$ and passes through the point $(6, 2)$. Find the equation of the line in the form $y = mx + c$.   [3]
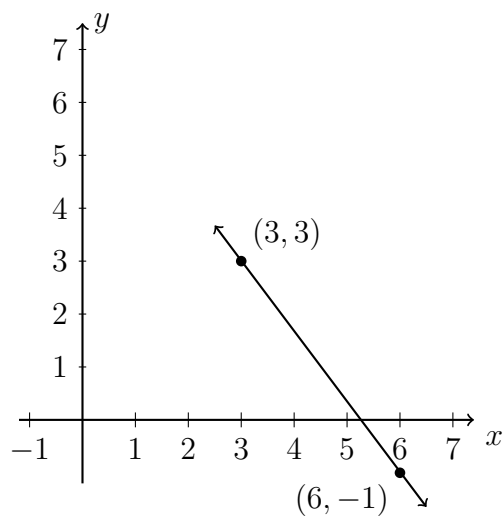
6. A line goes through the points $(3,3)$ and $(6,-1)$. [5]

    (a) Find the gradient of the line.

    (b) Find the equation of the line in the form $y = mx + c$.

7. Find the equation of the line through the points $(-2,7)$ and $(6,9)$. (in the form $y = mx + c$) [5]

BECA / IB Math 01-Linear functions   Name:
8 October 2021

8. A function f is shown in the table.   [5]

x	-2	0	2	4	6
$f(x)$	-1	3	7	11	15

(a) Is f a linear function? Why or why not?

(b) Is f a direct variation? Explain.
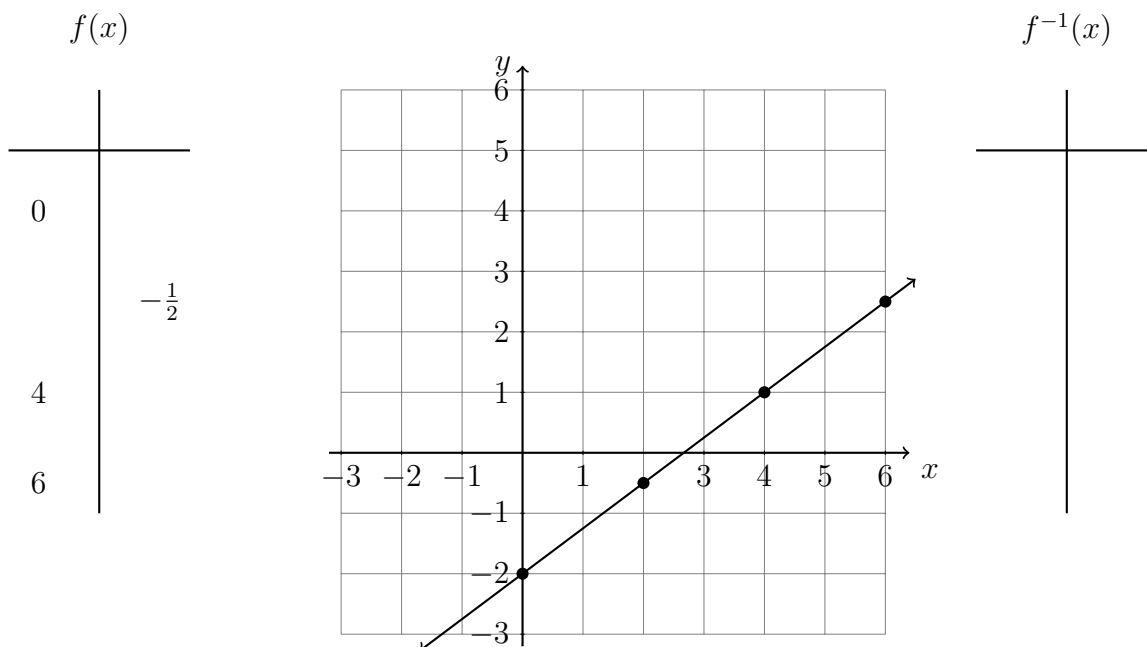
(c) Find the gradient of the function.

(d) Write down the equation of f in the form $y = mx + c$

(e) Complete the table of the inverse of f.

x					.
$f^{-1}(x)$					.

9. A function $f(x) = \dfrac{3}{4}x - 2$ is graphed below. [3]

    (a) Complete the T-table of values for the function on the left.

    (b) Write down the values for the inverse function in the right T-table.

    (c) Draw the line for the inverse function on the graph.

$f(x)$ $f^{-1}(x)$

$f(x)$	
0	
$-\frac{1}{2}$	
4	
6	

10. Find the inverse function of $f(x) = \dfrac{3}{5}x - 6$ using algebraic methods. (state f^{-1} in the form $y = mx + c$) [3]

BECA / IB Math 01-Linear functions   Name:
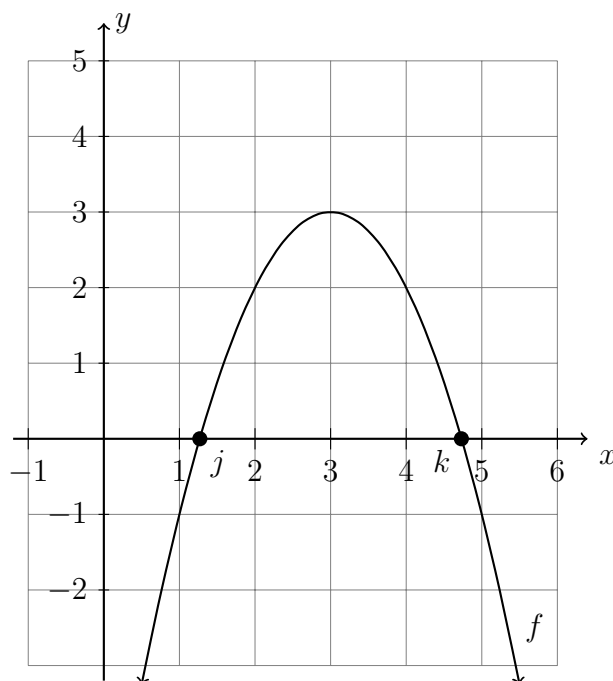8 October 2021

11. The function $f(x) = -x^2 + 6x - 6$ is shown on the graph.   [8]

   (a) Write down its vertex as an ordered pair.

   (b) Draw on the graph the function $g(x) = -x + 4$.

   (c) Find the two ordered pairs that satisfy both f and g.

   (d) Find the exact values of j and k, the x-intercepts of f. (as an expression with radicals, not a decimal)