Question 1

Plot each of the following sets of points on the Cartesian plane.

(a) \{(1, 1), (2, 4), (-1, 3)\}  
(b) \{(-2, 2), (-1, 1), (0, 0), (1, 1), (2, 2)\}  
(c) \{(3, -3), (-3, -3), (4, -4), (4, 4)\}  
(d) \{(1, 3), (-1, 3), (3, -1), (-3, -1), (0, 0)\}  

Question 2

For each of the following equations, substitute in all \(x\) values from the set \{-3, -2, -1, 0, 1, 2, 3\} to get a list of \(y\) values. Plot the corresponding points.

(a) \(y = 3x\)  
(b) \(y = 2x + 3\)  
(c) \(y = x^2 - x\)  
(d) \(y = (x - 3)(x + 2)\)  
(e) \(y = (1 - x)^2\)  
(f) \(y = 18 - 2x^2\)  

Question 3

For each of the following linear equations, find the gradient \(m\) and the \(y\)-intercept \(c\). From this, produce a rough sketch of the graph.

(a) \(y = 2x + 1\)  
(b) \(y = 4x + 1\)  
(c) \(y = -4x + 1\)  
(d) \(y = x - 4\)  
(e) \(y = x + 4\)  
(f) \(y = -x + 4\)  
(g) \(y = 8x - 3\)  
(h) \(y = \frac{1}{2}x + 2\)  
(i) \(y = \frac{1}{5}x + 2\)  
(j) \(y = -\frac{1}{5}x + 4\)  
(k) \(y = 3 - x\)  
(l) \(y = \frac{3}{2} - \frac{1}{2}x\)
Question 4

For each of the following quadratic equations, find

1. whether it is concave up (smile) or concave down (frown)
2. the $y$-intercept
3. the line of symmetry
4. the turning point

Sketch the resulting parabola.

(a) $y = (x - 1)(x - 3)$  \hspace{1cm} (h) $y = -(x + 3)^2 + 4$
(b) $y = (x + 1)(x - 3)$  \hspace{1cm} (i) $y = (x - 1)^2 + 3$
(c) $y = -(x + 1)(x - 3)$  \hspace{1cm} (j) $y = (x + 1)^2$
(d) $y = x^2 + 6x + 4$  \hspace{1cm} (k) $y = x^2 - 1$
(e) $y = x^2 - 6x + 4$  \hspace{1cm} (l) $y = x^2 - 4$
(f) $y = -x^2 - 4x - 4$  \hspace{1cm} (m) $y = (x + 1)^2 - 4$
(g) $y = (x - 2)^2 - 4$  \hspace{1cm} (n) $y = 2(x + 1)^2 - 4$
Solutions

Question 1

(a) 

(b) 

(c) 

(d) 

Question 2

(a) 

(b)
Question 3

(c) y

(d) y

(e) y

(f) y

(a) y

(b) y
Linear and Quadratic Graphs

Exercises

(c) Graph showing a linear function with the equation $y = x$.

(f) Graph showing a linear function with the equation $y = -x$.

(d) Graph showing a linear function with the equation $y = 2x$.

(g) Graph showing a linear function with the equation $y = -2x$.

(e) Graph showing a linear function with the equation $y = 3x$.

(h) Graph showing a linear function with the equation $y = -3x$. 

STUDYSmarter
Linear and Quadratic Graphs

(i) Exercise

(j) Exercise

(k) Exercise

(l) Exercise

Question 4

(a) Exercise

(b) Exercise
Using STUDYSmarter Resources

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