**1.** (a) Complete the table for *y* = *x*2 – 3*x* + 1

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| *x* | –2 | –1 | 0 | 1 | 2 | 3 | 4 |
| *y* | 11 |  | 1 | –1 |  | 1 | 5 |

**(2)**

(b) On the grid below, draw the graph of *y* = *x*2 – 3*x* + 1

**(2)**

(c) Use your graph to find an estimate for the minimum value of *y*.

*y* = ……………………

**(1)**

**(Total 5 marks)**

**2.** (a) Complete this table of values for *y* = *x*3 + *x* – 2

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *x* | –2 | –1 | 0 | 1 | 2 |
| *y* | –12 |  |  | 0 |  |

**(3)**

(b) On the grid, draw the graph of *y* = *x*3 + *x* – 2

**(2)**

**(Total 5 marks)**

**3.** The graph of *y* = f (*x*) is shown on the grids.

(a) On this grid, sketch the graph of *y* = f (*x* – 1)



**(2)**

(b) On this grid, sketch the graph of *y* = 2 f (*x*)



**(2)**

**(Total 4 marks)**

**4.**

 Write down the letter of the graph which could have the equation

(i) *y* = 3*x* – 2 ……………

(ii) *y* = 2*x*2 + 5*x* – 3 ……………

(iii) *y* = ……………

**(Total 3 marks)**

**5.** (a) Find the equation of the straight line which passes through the point (0, 3) and is perpendicular to the straight line with equation *y* = 2*x*.

.................................................

**(2)**

 The graphs of *y* = 2*x*2 and *y* = *mx* – 2 intersect at the points *A* and *B*. The point *B* has coordinates (2, 8).

(b) Find the coordinates of the point *A*.

(........, ........)

**(Total 4 marks)**

**7.**

 The diagram shows 4 straight lines, labelled **P**, **Q**, **R** and **S.**

 The equations of the straight lines are

 **A**: *y* = 2*x*
**B**: *y* = 3 - 2*x*
**C**: *y* = 2*x* + 3**D**: *y* = 3

 Match each straight line, **P**, **Q**, **R** and **S** to its equation.
Complete the table.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Equation | **A** | **B** | **C** | **D** |
| Straight line |  |  |  |  |

**(Total 2 marks)**

**6.** (a) Complete the table of values for *y* = *x*3 - 3*x* + 1

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *x* | -2 | -1.5 | -1 | -0.5 | 0 | 0.5 | 1 | 1.5 | 2 |
| *y* | -1 |  | 3 | 2.375 | 1 | -0.375 |  | -0.125 | 3 |

**(1)**

(b) On the grid, draw the graph of *y* = *x*3 - 3*x* + 1 for -2 £ *x* £ 2

**(2)**

**(Total 3 marks)**

**7.**

 The diagram shows 4 straight lines, labelled **P**, **Q**, **R** and **S.**

 The equations of the straight lines are

 **A**: *y* = 2*x*
**B**: *y* = 3 - 2*x*
**C**: *y* = 2*x* + 3**D**: *y* = 3

 Match each straight line, **P**, **Q**, **R** and **S** to its equation.
Complete the table.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Equation | **A** | **B** | **C** | **D** |
| Straight line |  |  |  |  |

**(Total 2 marks)**

**8.** Here are five graphs labelled **A**, **B**, **C**, **D** and **E**.

 Each of the equations in the table represents one of the graphs **A** to **E**.

 Write the letter of each graph in the correct place in the table.

|  |  |
| --- | --- |
| **Equation** | **Graph** |
| *x* + *y* = 5 |  |
| *y* = *x* – 5 |  |
| *y* = –5 – *x* |  |
| *y* = – 5 |  |
| *x* = – 5 |  |

**(Total 3 marks)**

**9.**

 The diagram shows the graph of the equation *y* = 2*x*2 – 4*x* – 3

 Use the graph to find the approximate values of *x* when 2*x*2 – 4*x* – 3 = 0

*x* = ................................ or *x* = ................................

**(Total 2 marks)**

**10.** (a) Complete the table of values for *y =*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| *x* | 0.2 | 0.4 | 0.8 | 1.0 | 2.0 | 4.0 |
| *y* | 5.0 |  | 1.25 | 1.0 |  |  |

**(2)**

(b) On the grid, draw the graph of *y =* for *x* >0.2

**(2)**

**(Total 4 marks)**

1. (a) 5, -1 2

B1 for each correct *answer*

(b) 2

B1 ft for all 7 points plotted correctly
B1 ft for smooth curve through all 7 points (dep on B1 in *(a))*

(c) -1.25 1

B1 ft ±½ square (dep on a single minimum from a curve through 6 *points)*

**[5]**

2. (a) (– 12) – 4 – 2 (0) 8 3

*B3 for all correct [(B1 for each one correct)*

(b) 5 points plotted accurately
points joined with smooth curve 2

B1 ± *1 full (2mm) square ft table if at least B1
awarded (all 5 points plotted)
B1 ft for any smooth curve if previous B1 gained
NB: curve must pass within 1 full square of the points*

**[5]**

3. (a) Graph translated 1 unit to the right passing through
the points (–1, 0), (1, 2) and (2, 0) 2

M1 for translation of or
A1 for right through the 3 points, ± *sq*

(b) Graph stretched 2 units parallel to y-axis; passing
through the points (–2, 0), (0, 4) and (1, 0) 2

M1 for graph stretched parallel to the y-axis by scale factor 2
A1 through all 3 points; ± *sq not on grid at x = 2*

**[4]**

4. H
D
A 3

*B1 cao
B1 cao
B1 cao*

**[3]**

5. (a) y = –0.5x + 3 oe 2

*B2 for y =* –0.5x + 3 oe
(B1 for y = nx + 3 oe or *y = –0.5x + a oe)*

(b) (0.5, 0.5) 4

 8 = 2m – 2 (m = 5)
2x2 = 5x – 2
2x2 – 5x + 2 = 0
(2x – 1)(x – 2) = 0
x = 2, 0.5
y = 5 × 0.5 – 2

*M1 for 8 = 2m* – 2 OR 2x2 = mx - 2
M1 for 2x2 *=* “5” ´ *x* – 2 OR y = 2 ´ ()2*A1 for x = 0.5
A1 for y = 0.5*

**[6]**

6. (a) 2.125, -1 1

*B1 for both values correct*

(b) Points plotted, correct graph 2

B1 ft for at least 6 points correctly plotted ± *½ sq
B1 for smooth curve drawn through at least 8 correct points*

**[3]**

7. S, P, R, Q 2

*B2 all correct
(B1 for 2 or 3 correct)*

**[2]**

8. C, E, A, D, B, 3

*B3
(B2 for 3 correct)
(B1 for 2 correct)*

**[3]**

9. –0.6, 2.6 2

*B1for 2.55* – 2.65
B1 for –0.55 – –0.65
Alternative Scheme
B1 for oe
B1 for  *oe*

**[2]**

10. (a) 5.0 2.5 1.25 1.0 0.5 0.25 2

*B2 all 3 correct
(B1 for any 2 correct )*

(b) Graph 2

*B1 ft for all points plotted correctly
B1 (ft if at least B1 in (a)) for smooth curve*

**[4]**