



5.10F Drawing Other Graphs: Cubic/Reciprocal: Foundation Tier Practice

EDEXCEL Edexcel 1MA1 · Calculator allowed · about 40 minutes

Total Marks

Name: _____ Date: ____ / ____ / ____

Answer ALL questions. Show all your working.

- 1 Work out the value of y when $y = x^3$ and $x = 2$.

(Total for Question 1 is 1 mark)

- 2 Complete the table for $y = x^3$. Give values for the missing entries.

(a) $x = -2$, $y =$ _____

(1)

(b) $x = 1$, $y =$ _____

(1)

(Total for Question 2 is 2 marks)

- 3 Work out the value of y when $y = 1/x$ and $x = 4$.

(Total for Question 3 is 1 mark)

- 4 Complete the table for $y = 1/x$. Give exact values as fractions where appropriate.

(a) $x = -2$, $y =$ _____

(1)

(b) $x = 1$, $y =$ _____

(1)

(Total for Question 4 is 2 marks)

5 Solve the equation $x^3 = 27$. Give the value of x .

(Total for Question 5 is 1 mark)

6 Solve the equation $x^3 - 8 = 0$. Give the value of x .

(Total for Question 6 is 1 mark)

7 Work out the value of x when $y = 1/x$ and $y = 1/3$.

(Total for Question 7 is 1 mark)

8 For $x = 1$ and $x = 2$, calculate the values of y for both $y = x^3$ and $y = 1/x$. Then state which graph has the larger y -value at $x = 2$.

(Total for Question 8 is 3 marks)

9 Describe in words how the graph of $y = (x - 1)^3$ is related to the graph of $y = x^3$. Give the translation only.

(Total for Question 9 is 1 mark)

10 A student draws the graph of $y = 1/x$ and writes 'the graph crosses the x -axis at $x = 0$ '. Is the student correct? Give a short reason.

(Total for Question 10 is 2 marks)

11 Work out the value of y for $y = x^3$ when $x = -1$ and when $x = 3$.

(a) $x = -1, y = \underline{\hspace{2cm}}$ (1)

(b) $x = 3, y = \underline{\hspace{2cm}}$ (1)

(Total for Question 11 is 2 marks)

12 Work out the value of y for $y = 1/x$ when $x = 5$ and when $x = -5$. Give exact values as fractions or decimals.

(a) $x = 5, y = \underline{\hspace{2cm}}$ (1)

(b) $x = -5, y = \underline{\hspace{2cm}}$ (1)

(Total for Question 12 is 2 marks)

13 The graph of $y = x^3 + 2$ is a translation of the graph $y = x^3$.

(a) Describe the translation.

(b) Write down the y -intercept of $y = x^3 + 2$.

(a) Describe the translation. (1)

(b) Write down the y -intercept of $y = x^3 + 2$. (1)

(Total for Question 13 is 2 marks)

Mark scheme · 5.10F Drawing Other Graphs: Cubic/Reciprocal: Foundation Tier Practice

Question 1

- **B1** 8 cao
- **Answer: 8**

Question 2

- (a) **B1** -8 cao
- (a) **Answer: -8**
- (b) **B1** 1 cao
- (b) **Answer: 1**

Question 3

- **B1** $\frac{1}{4}$ or 0.25 cao
- **Answer: $\frac{1}{4}$ or 0.25**

Question 4

- (a) **B1** $-\frac{1}{2}$ cao
- (a) **Answer: $-\frac{1}{2}$**
- (b) **B1** 1 cao
- (b) **Answer: 1**

Question 5

- **B1** 3 cao
- **Answer: 3**

Question 6

- **B1** 2 cao
- **Answer: 2**

Question 7

- **B1** 3 cao
- **Answer: 3**

Question 8

- **M1** calculate $y = x^3$ for $x = 1$ and $x = 2$ (1 and 8)
- **M1** calculate $y = 1/x$ for $x = 1$ and $x = 2$ (1 and $\frac{1}{2}$)
- **A1** statement: $y = x^3$ has larger value at $x = 2$ ($8 > \frac{1}{2}$) cao
- **Answer: At $x=1$: $y=x^3 = 1$, $y=1/x = 1$. At $x=2$: $y=x^3 = 8$, $y=1/x = 1/2$. The graph $y = x^3$ has the larger y -value at $x = 2$.**

Question 9

- **B1** translated 1 unit to the right oe
- **Answer: Translated 1 unit to the right.**

Question 10

- **M1** state not correct and give reason that $y = 1/x$ is undefined at $x = 0$ or vertical asymptote at $x=0$
- **A1** answer: Not correct; y is undefined at $x = 0$ so the curve does not cross the x -axis cao
- **Answer: No. Not correct; $y = 1/x$ is undefined at $x = 0$ (vertical asymptote), so the graph does not cross the x -axis.**

Question 11

- (a) **B1** -1 cao
- (a) **Answer: -1**
- (b) **B1** 27 cao
- (b) **Answer: 27**

Question 12

- (a) **B1** $\frac{1}{5}$ or 0.2 cao
- (a) **Answer: $\frac{1}{5}$**
- (b) **B1** $-\frac{1}{5}$ or -0.2 cao
- (b) **Answer: $-\frac{1}{5}$**

Question 13

- (a) **B1** translated 2 units up oe
- (a) **Answer: Translated 2 units up.**
- (b) **B1** (0, 2) cao
- (b) **Answer: (0, 2)**