

Year 11 Zonal 2026

Y11/1. A rubber ball falls from a height of **15 m**. Each bounce rises to $\frac{2}{3}$ of the previous height. Calculate the **total distance** travelled by the ball before it comes to rest.

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Y11/2. Find the **sum** of the first 300 positive **odd numbers**.

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Y11/3 A group of people attend a meeting. Each person shakes hands once with every other person. If the total number of handshakes is 190, find the number of people at the meeting.

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Y11/4 Make f the subject of the formula $\frac{1}{f+2} = \frac{1}{u} + \frac{1}{v}$

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Y11/5. The 6th term of an arithmetic sequence is 17 and the 14th term is 41. Find the common difference.

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Y11/6. Simplify $\frac{x^2 + 10x + 24}{x^2 + 2x - 24}$

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Y11/7. Find the values of p if $9, p + 1, 16, \dots$ is a geometric sequence

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Y11/8 Evaluate $\sum_{n=8}^{27} (3n + 7)$

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Y11/9 What is the size of the smaller angle between the hour and minute hands of a clock at 9:30?

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Y11/10. Given that it is 4 o'clock, exactly how long, in minutes, will it take for the minute hand to catch up with the hour hand?

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Y11/11 In a survey of **80 students**, students were asked if they play **soccer, basketball, or tennis**.

- 45 students play soccer.
- 12 students play both soccer and basketball.
- 8 students play both soccer and tennis.
- 3 students play all three sports.

How many students play only soccer?

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Y11/12 Simplify $150x - (2x - 5)^3 + 60x^2$.

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Y11/13 Solve the equation $x - 5 = \frac{24}{x}$

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Y11/14 A can complete a task in **16 days**, B in **24 days**, and C in **12 days**.
They all work together for **2 days**, after which C leaves.
Find the total number of days taken to complete the task.

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Y11/15 When a **9** is written at the right-hand end of a three-digit number, its value is increased by **5670**. Find the original number.

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Y11/16. Solve $9^{2x} - 4(9^x) + 3 = 0$

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Y11/17. What is the domain of the relation $x^2 - 6x + y^2 + 4y - 12 = 0$?

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Y11/18. **Solve** $\frac{2x}{3} - \frac{x-1}{2} = \frac{9}{4}$

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Y11/19. Seven boys sit around a circular dinner table. Three particular boys must **not sit together**. How many different seating arrangements are possible?

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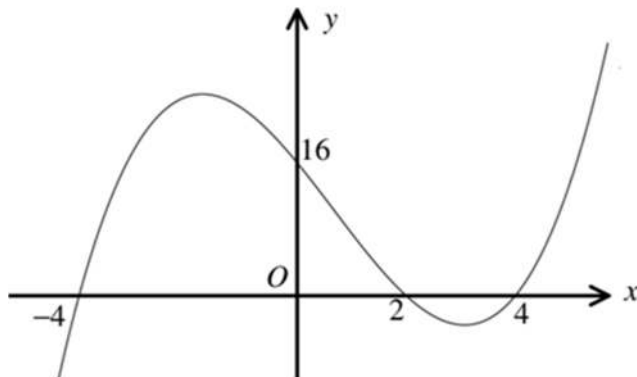
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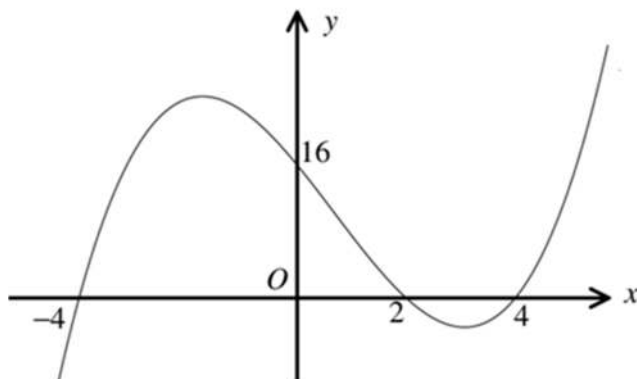
. _____

Y11/20. What is the equation of the graph below?



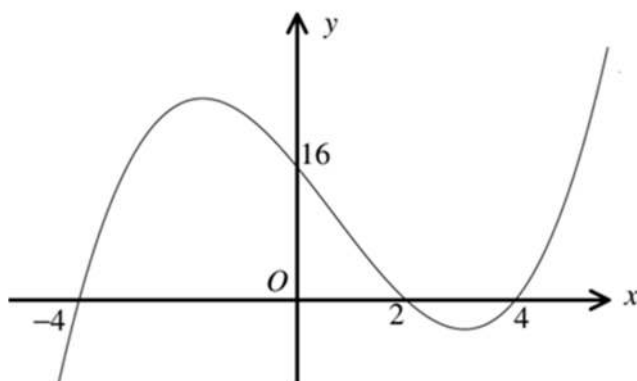
Give your answer in an expanded form.

Y11/20. What is the equation of the graph below?



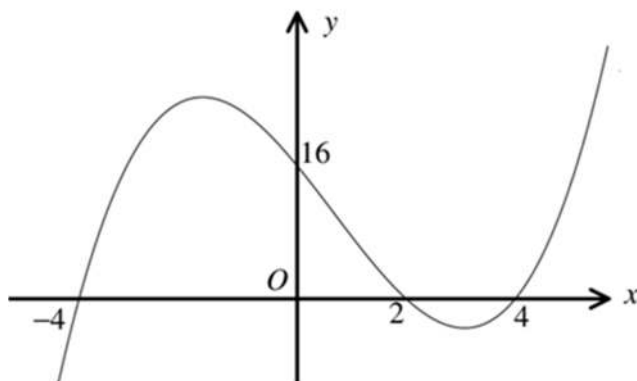
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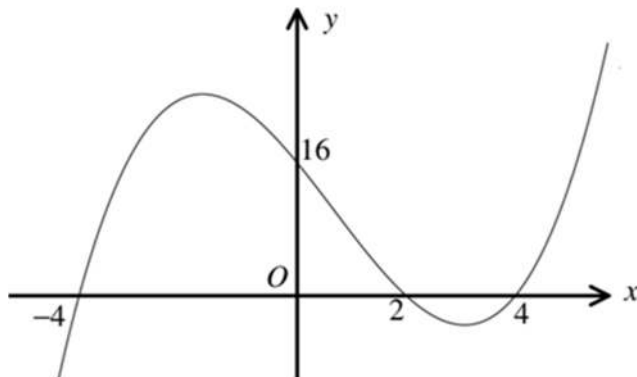
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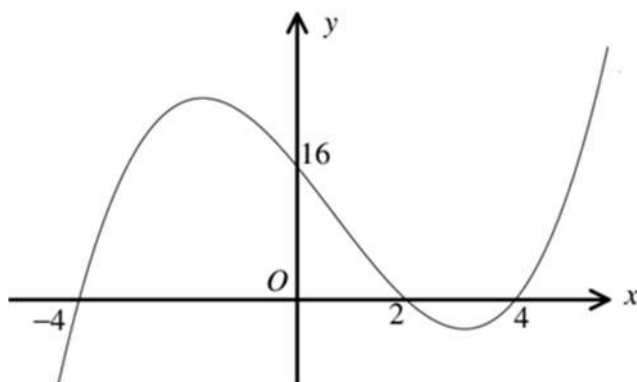
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