

Graphs Revision

1) Using the tables of values provided, plot the following graphs:

a) $y = 3x - 1$

x	-3	-2	-1	0	1	2	3
y							

b) $y = 7 - 2x$

x	-3	-2	-1	0	1	2	3
y							

c) $y = x^2 + 2x - 4$

x	-3	-2	-1	0	1	2	3
y							

2) Write down the gradient and y-intercept of the following straight lines:

a) $y = 3x + 4$

b) $y = 7 - x$

c) $y = 7x$

d) $y = \frac{x}{2} - 1$

e) $x - y = 5$

f) $3y - 2x = 5$

3) Find the equation of the straight line:

a) with gradient of 4 that passes through (2,3)

b) with gradient of -2 that passes through (-1,-5)

c) parallel to $y = 3x + 5$ that passes through (4,-1)

d) that passes through (3,4) and (5,-2)

e) perpendicular to $y = 2x - 1$ that goes through (4,3)

f) perpendicular to $y = \frac{1}{3}x + 7$ that goes through (-1,5)

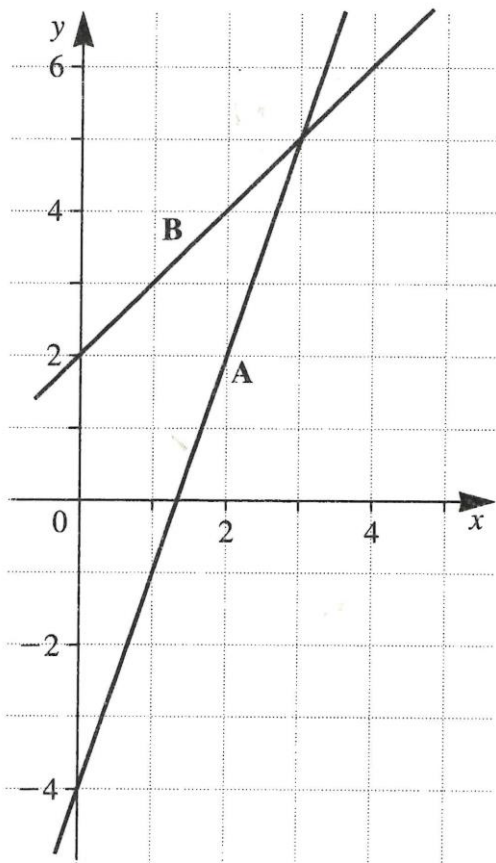
g) perpendicular to $2y = -3x$ that goes through (6,-1)

4) Write down the equations of the following lines:

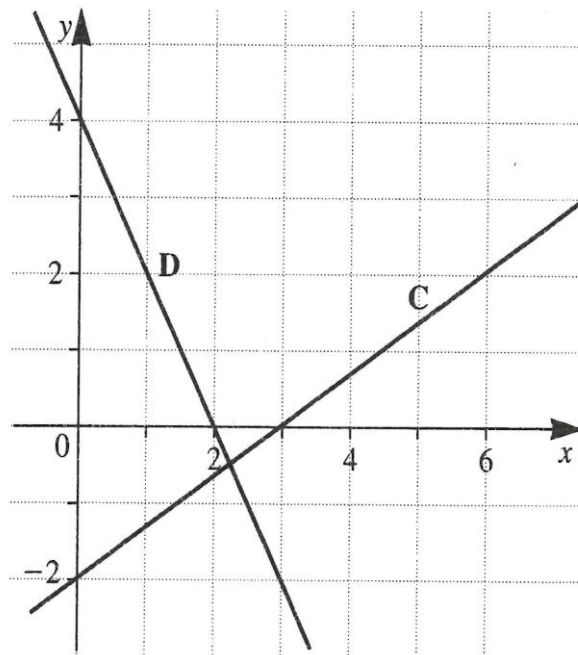
a) horizontal line going through -3

b) vertical line going through 6

5) Find the equations of the lines A and B.

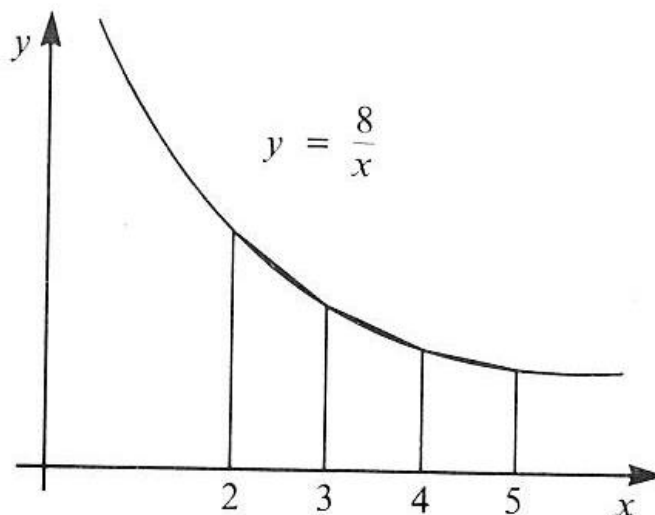


Find the equations of the lines C and D.



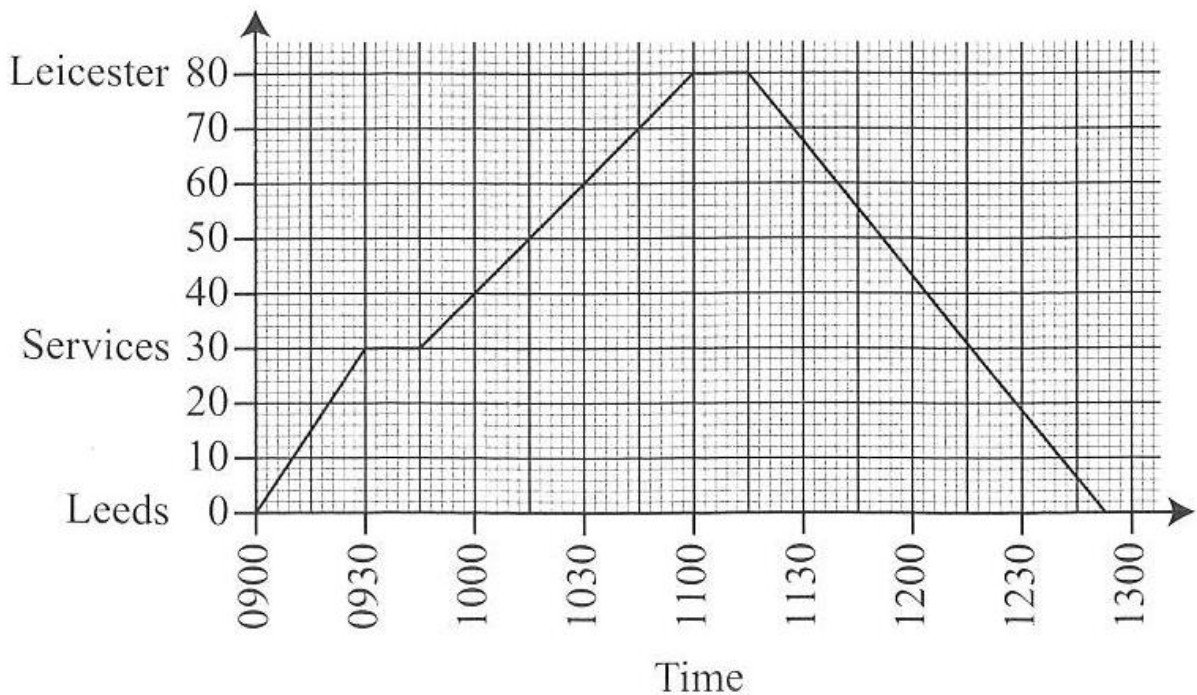
6) Estimate the area enclosed by $y = \frac{8}{x}$, $x = 2$, $x = 5$ and the x axis.

Do you think your answer will be an under or over estimate?



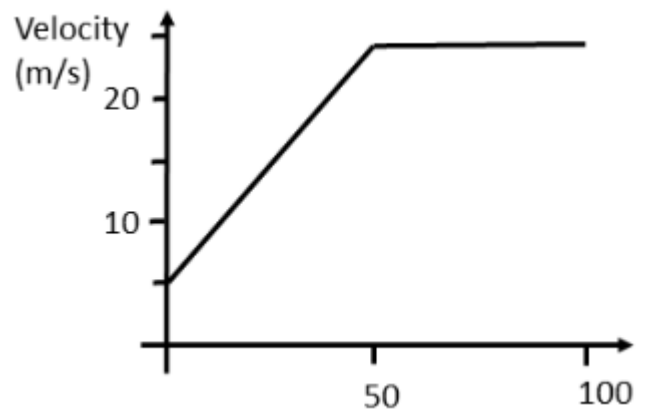
7) The graph below shows a car journey from Leeds to Leicester and back

Distance
from Leeds (miles)



- how far is the car from Leeds at 1015?
- find the speed of the car between the services and Leicester
- how long did the car stop for?
- find the average speed of the car

8) A velocity time graph for a rocket is given to the right



- Find its acceleration after 10 secs
- Find the distance covered in the first 100 seconds.
- Find the average speed of the rocket

9) The velocity, v , of a car (m/s) is given by the formula:

$$v = 40 + t - t^2$$

- Draw a velocity time graph for the first 6 seconds of travel.
 - Find its acceleration at 3 seconds
 - Find its average acceleration between 0 and 3 seconds
 - Find the total distance travelled by the car during the 6 seconds.
 - Find out when the acceleration is approximately 1m/s^2
- 10) A car starts a 900m drag race at rest and accelerates uniformly up to 24m/s by the end of it. Find its acceleration.
- 11) A man is running at 4m/s before he slows down at a constant rate, covering 5m in the next 1.5 seconds, find the deceleration of the man.
- 12) A rocket is travelling through space at 120m/s . It fires its boosters and accelerates at 5m/s^2 for 20 seconds. Find the distance it travels in this time

Answers:

- 1) y-values are... a) -10, -7, -4, -1, 2, 5, 8 b) 13, 11, 9, 7, 5, 3, 1
- c) -1, -4, -5, -4, -1, 4, 11 2) gradient/y-intercept a) $3/4$ b) $-1/7$ c) $7/0$
- d) $0.5/-1$ e) $1/-5$ f) $\frac{2}{3}/\frac{5}{3}$ 3a) $y = 4x - 5$ b) $y = -2x - 7$ c) $y = 3x - 13$
- d) $y = -3x + 13$ e) $y = -\frac{1}{2}x + 5$ f) $y = -3x + 2$ g) $y = \frac{2}{3}x - 5$
- 4a) $y = -3$ b) $x = 6$ 5a) $y = 3x - 4$ b) $y = x + 2$
- c) $y = \frac{2}{3}x - 2$ d) $y = -2x + 4$ 6) $\frac{112}{15}$ overestimate 7a) 50miles b) 40mph
- c) 30min d) 41.3mph 8a) 0.4m/s^2 b) 2km c) 20m/s

9)

t	0	1	2	3	4	5	6
v	40	40	38	34	28	20	10

- b) $\sim -5\text{m/s}^2$ c) -2m/s^2 d) 161m e) 0.5s
- 10) 3.125m/s^2 11) $-\frac{8}{9}\text{m/s}^2$ 12) 3400m