Name:

Exam Style Questions

Exponential Graphs

Corbettmaths

Ensure you have: Pencil, pen, ruler, protractor, pair of compasses and eraser

You may use tracing paper if needed

Guidance

1. Read each question carefully before you begin answering it.
2. Don't spend too long on one question.
3. Attempt every question.
4. Check your answers seem right.
5. Always show your workings

Revision for this topic

www.corbettmaths.com/contents

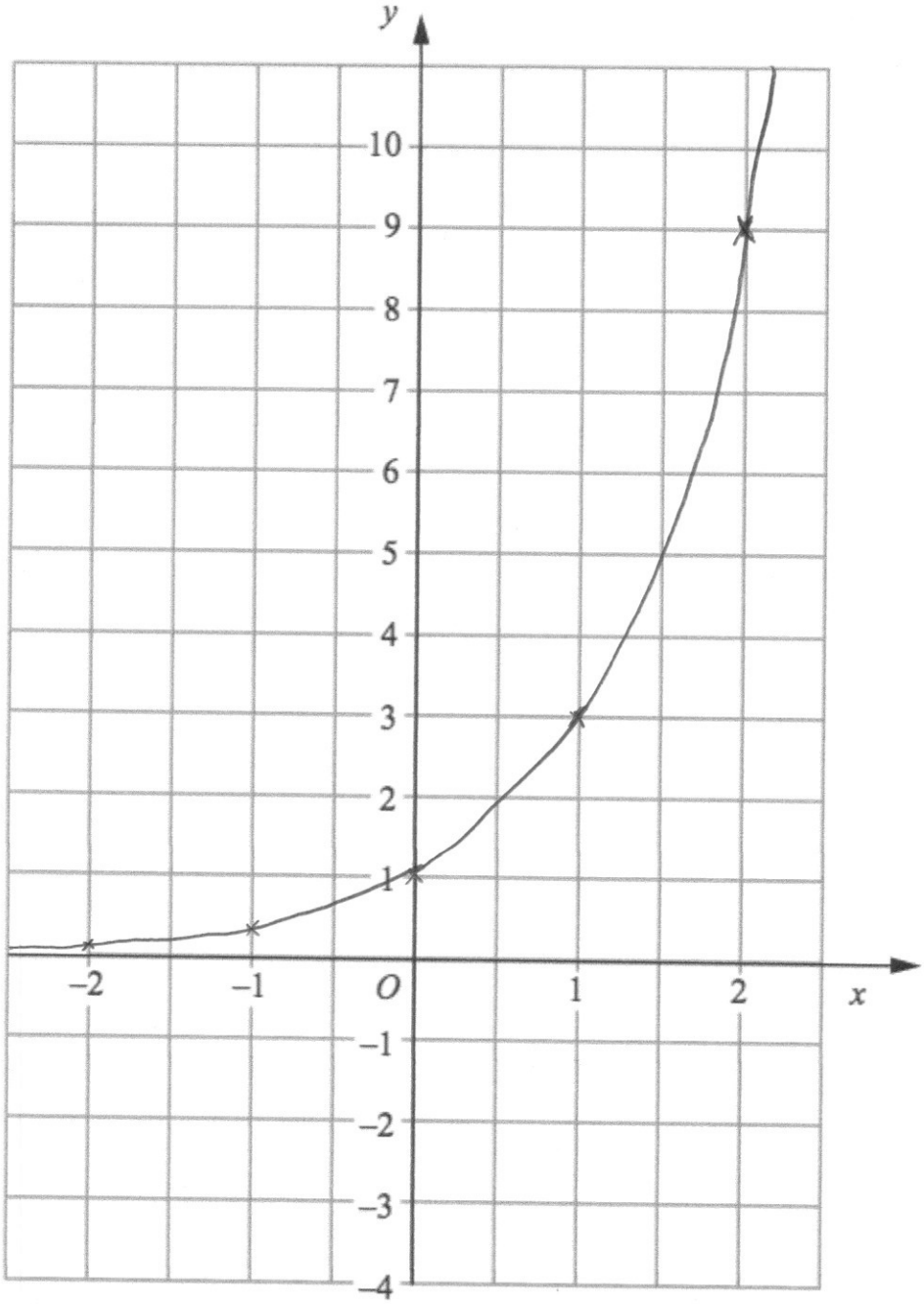
Video 345

1. (a) Complete the table of values for $y = 3^x$

x	-2	-1	0	1	2
y	$\frac{1}{9}$	$\frac{1}{3}$	1	3	9

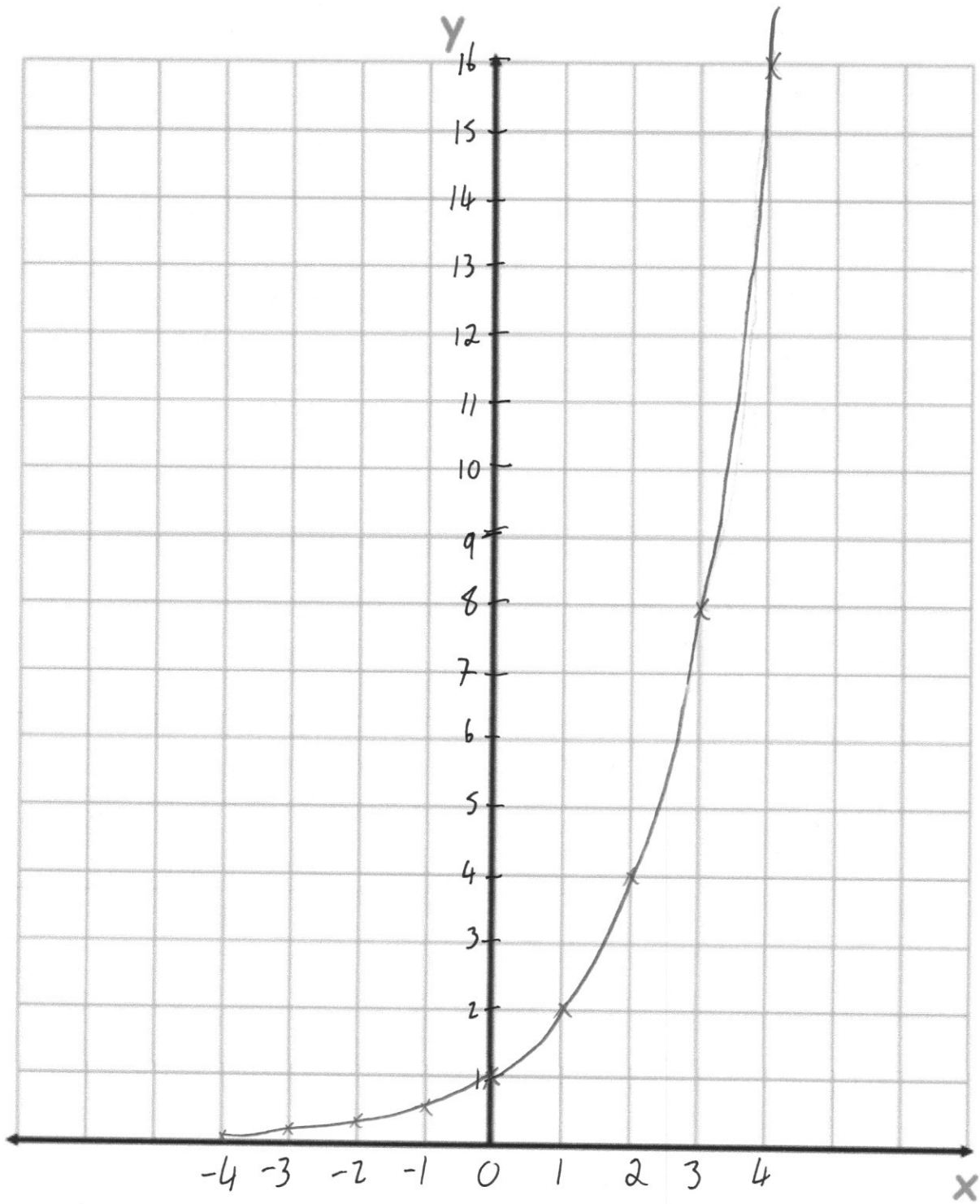
(2)

(b) Draw the graph of $y = 3^x$ for values of x from –2 to 2



(2)

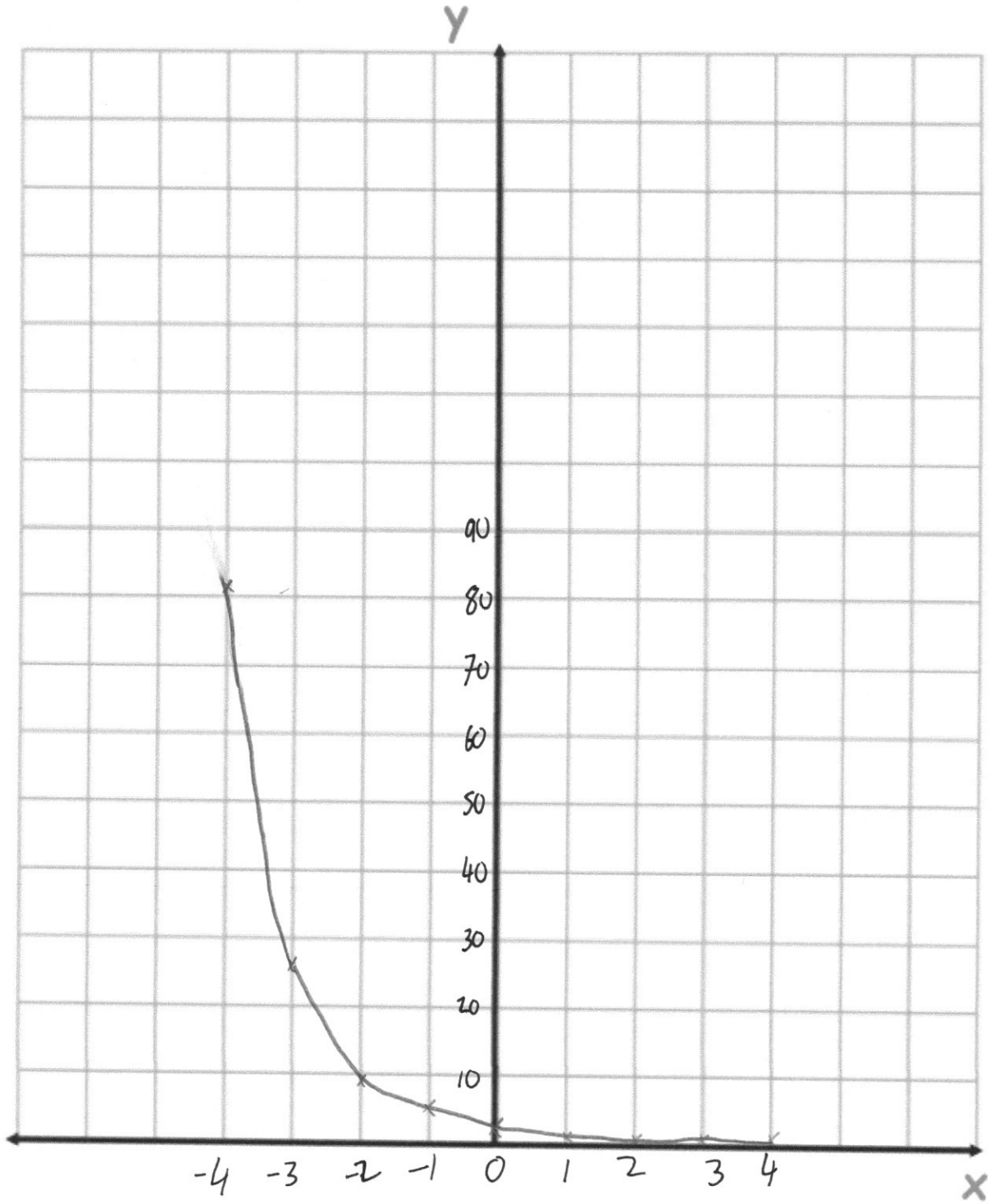
2. Draw the graph of $y = 2^x$ for values of x from –4 to 4



x	-4	-3	-2	-1	0	1	2	3	4
y	$\frac{1}{16}$	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{1}{2}$	1	2	4	8	16

(4)

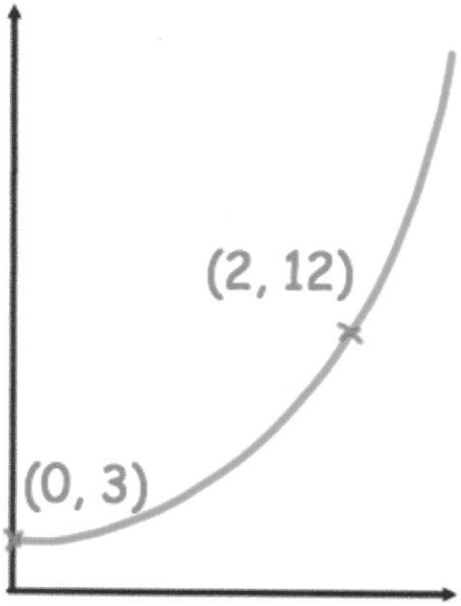
3. Draw the graph of $y = (\frac{1}{3})^x$ for values of x from –4 to 4



x	-4	-3	-2	-1	0	1	2	3	4
y	81	27	9	3	1	$\frac{1}{3}$	$\frac{1}{9}$	$\frac{1}{27}$	$\frac{1}{81}$

(4)

4.



The sketch shows a curve with equation
$y = ab^x$ where a and b are constants and $b > 0$

The curve passes through the points (0, 3) and (2, 12)

Calculate the value of a and b

$a = 3$ as when $x = 0$ $b^x = 1$

$y = a \times 1$

$3 = a \times 1$

$a = 3$

$(2, 12)$

$y = 3b^x$

$12 = 3 \times b^2$

$4 = b^2$

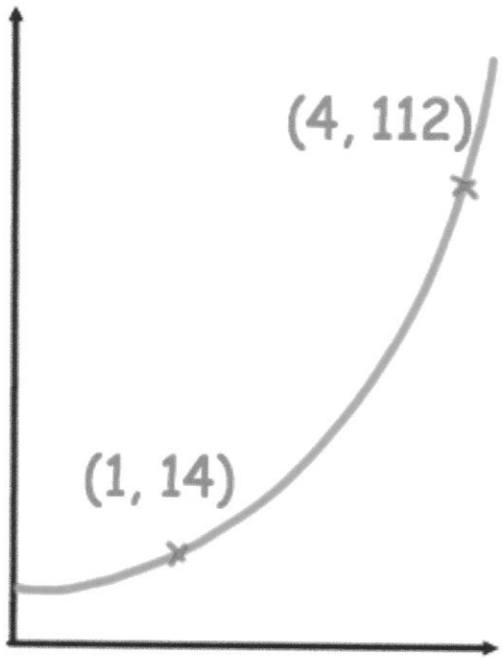
$b = 2$

a = 3

b = 2

(3)

5.



The sketch shows a curve with equation
$y = ab^x$ where a and b are constants and $b > 0$

The curve passes through the points (1, 14) and (4, 112)

Calculate the value of a and b

$y = ab^x$

(1, 14) $14 = ab^1$ —

$14 = ab$

(4, 112) $112 = ab^4$ — (2)

(2) ÷ (1) = $\frac{112}{14} = \frac{ab^4}{ab}$

$8 = b^3$

$b = 2$

Sub $b = 2$ into (1)

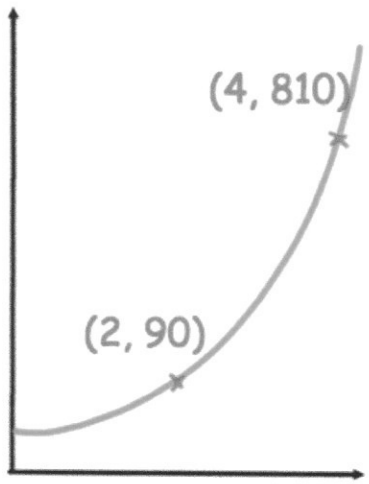
$14 = a \times 2$

a = 7

b = 2

(3)

6.



The sketch shows a curve with equation
$y = ab^x$ where a and b are constants and $b > 0$

The curve passes through the points (2, 90) and (4, 810)

Calculate the value of a and b

(2, 90)

$90 = ab^2$ — (1)

(4, 810) A

$810 = ab^4$ — (2)

(2) ÷ (1)

$9 = b^2$

$b = 3$

sub into (1)

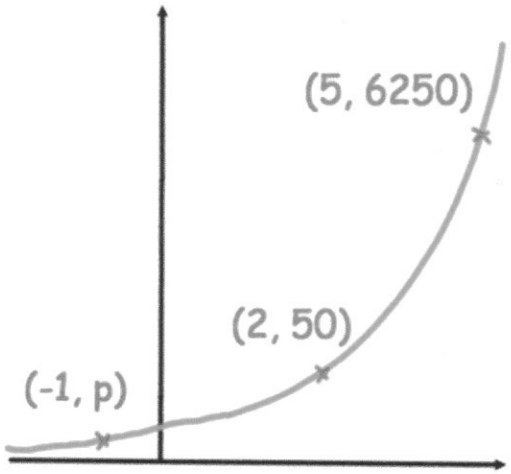
$90 = a \times 9$

a = 10

b = 3

(3)

7.



The sketch shows a curve with equation
$y = ab^x$ where a and b are constants and $b > 0$

The curve passes through the points (2, 50), (5, 6250) and (-1, p)

Calculate the value of p

(2, 50)

$50 = ab^2$ — (1)

(5, 6250)

$6250 = ab^5$ — (2)

(2) ÷ (1) = $125 = b^3$

$b^3 = 125$

$b = 5$

sub into (1)

$a = 2$

$y = 2 \times 5^x$

(-1, p)

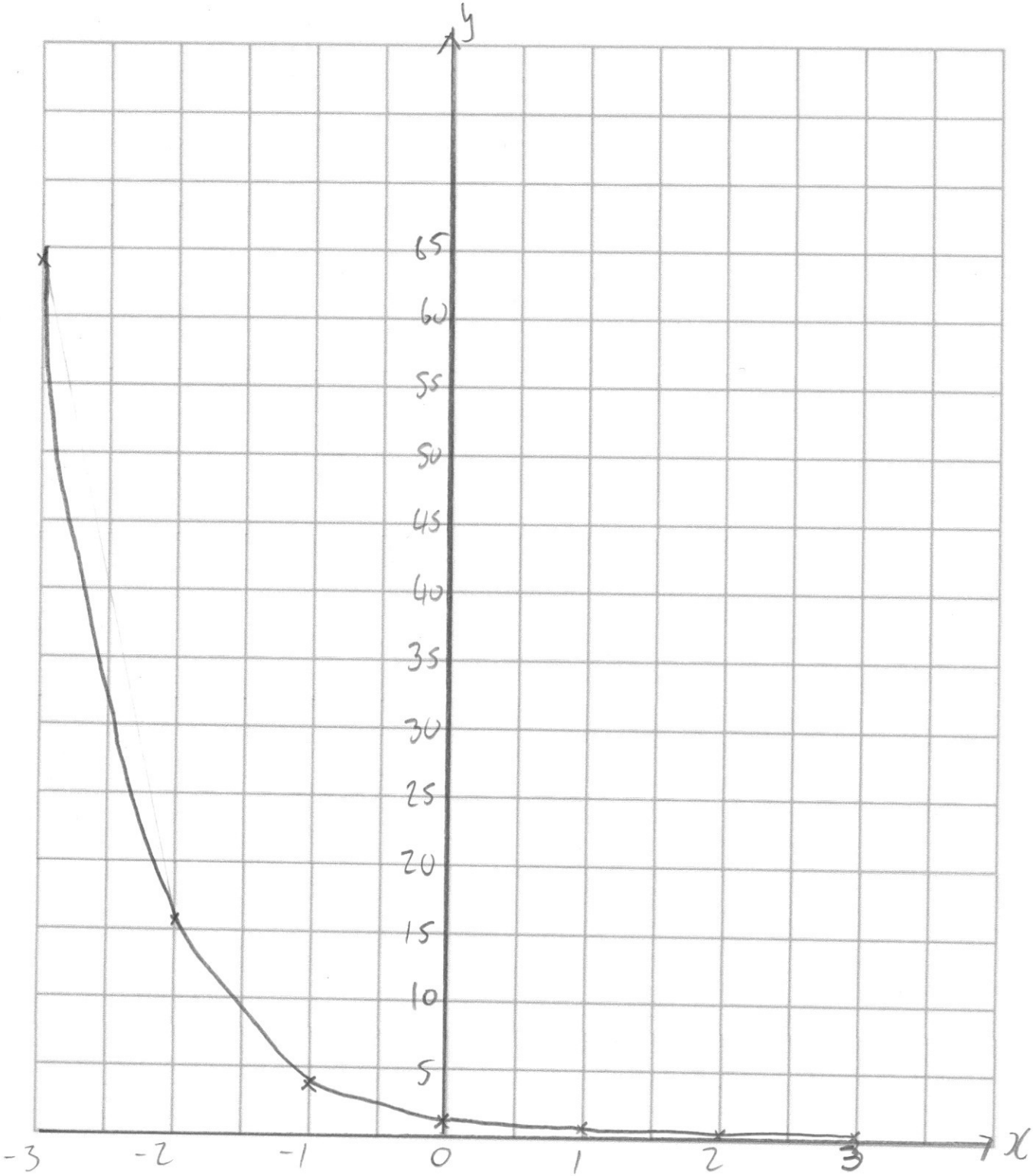
$p = 2 \times 5^{-1}$

$= 2 \times \frac{1}{5}$

p = $\frac{2}{5}$

(3)

8. Draw the graph $y = (0.25)^x$ for values of x from –3 to 3



x	-3	-2	-1	0	1	2	3
y	64	16	4	1	$\frac{1}{4}$	$\frac{1}{16}$	$\frac{1}{64}$

(4)

9. For each of the following statements, tick "True" or "False."

(a) The graph $y = 8^x$ passes through the point (0, 1)

$8^0 = 1$ ✓

True ☑ False ☐

(b) The graph $y = 3^x$ passes through the point (3, 9)

$3^3 = 27$

True ☐ False ☑

(c) The graph $y = (-2)^x$ passes through the point (3, -8)

There is no graph for $y = (-2)^x$

True ☐ False ☑

(d) The graph $y = 5^x$ passes through the point (-1, 0.2)

$5^{-1} = \frac{1}{5}$

True ☑ False ☐

(e) The graph $y = 8^x$ passes through the point (0, 1)

see (a).

True ☑ False ☐

(5)