CTJan27 Online Year 10 Revision

48 marks from 48 questions

Question 1

Evaluate each term.

$64^{\frac{1}{2}}$	$64^{\frac{1}{3}}$	$64^{\frac{1}{6}}$
8	☐	☐

Question 2

Choose ***all*** correct answers.

$\frac{1}{\sqrt{b^{-1}}}$ is equivalent to:

a. ☐ $\frac{1}{\sqrt{b}}$ b. ☐ $\sqrt{b}$ c. ☐ b^2 d. ☐ $b^{\frac{1}{2}}$

Question 3

Select the true statement.

a) $8^{\frac{3}{2}}$ is a rational number. b) $8^{\frac{3}{2}}$ is an irrational number.

c) $8^{\frac{3}{2}}$ is not a real number so it is neither rational nor irrational.

Question 4

$y^2 = -49$

This equation can be solved:

a) in the rational number system b) in the irrational number system c) in the imaginary number system

Question 5

$\sqrt{8y} \times \sqrt{2y} =$ ☐

Question 6

Evaluate $\left(\frac{1}{\sqrt{5}}\right)^{-4}$

$\left(\frac{1}{\sqrt{5}}\right)^{-4} =$ ☐

Question 7

Write $2\sqrt{432}$ using its simplest base.

$2\sqrt{432} =$ ☐ $\sqrt{}$ ☐

Question 8

Write the answer in its simplest form, with a rational denominator and with the surd expressed with its simplest base.

$\frac{4}{\sqrt{2}} - \frac{1}{\sqrt{18}} =$ ☐ $\sqrt{}$ ☐ / ☐

Question 9

Which of the following fractions is equivalent to $\frac{\sqrt{7} - 1}{3}$?

a) $\frac{2}{\sqrt{7} - 1}$ b) $\frac{3}{\sqrt{7} - 1}$ c) $\frac{3}{\sqrt{7} + 1}$ d) $\frac{2}{\sqrt{7} + 1}$

Question 10

$\left(\frac{2}{\sqrt{5} - 1}\right)^2 =$

a) $\frac{2}{2 - \sqrt{5}}$ b) $\frac{2}{3 - \sqrt{5}}$ c) $\frac{\sqrt{5} + 1}{2}$

Question 11

$7^{\square} = 1$

Therefore:

$\log_7 1 = \square$

Question 12

Evaluate

$\log_8 4 = \frac{\square}{\square}$

Question 13

The Richter scale is logarithmic base 10.

Enter a number to complete this sentence.

An earthquake measuring 6 on the Richter scale is [ ] times more powerful than a quake measuring 2.

Question 14

Select the true completion of this statement when considering all bases that are positive integers greater than 1.

If $\log_x y = m$, then m can never be:

a. ○ less than x
b. ○ greater than x
c. ○ less than y
d. ○ greater than y
e. ○ less than zero
f. ○ greater than zero

Question 15

Evaluate this logarithm by first writing $\frac{1}{y^8}$ in index form.

$\log_y \left(\frac{1}{y^8}\right) =$ ☐

Question 16

If $\log_a 5 = 2.4$, evaluate $\log_a \sqrt{5a}$.

$\log_a \sqrt{5a} =$ ☐

Question 17

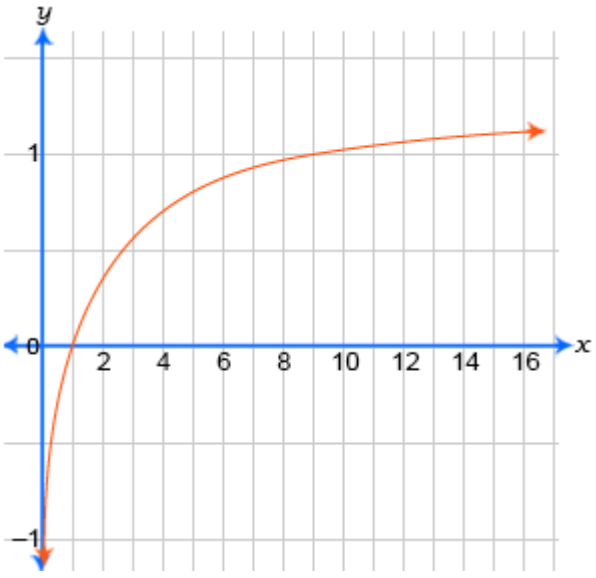
The point (729, 6):

a. ○ lies above the curve $y = \log_3 x$

b. ○ lies below the curve $y = \log_3 x$

c. ○ lies on the curve $y = \log_3 x$

Question 18



This is the graph of $y = \log_a x$ where the base, a, is an integer.

What is the value of a?

$a =$ ☐

Question 19

Solve:

$7^{k-5} = 1$

$k =$ ☐

Question 20

Solve for x :

$2^{x} \times 3^{x-1} = 2592$

$x =$ ☐

Question 21

Solve $2^{4x-8} = 1$

$x =$ ☐

Question 22

Solve for y .

$2^{2y} - 16 \times 2^{y} + 64 = 0$

Hint: Substitute k for 2^{y} . Solve the new equation for k then solve for y .

$y =$ ☐

Question 23

Which of the following shows the factors of $11k^2 - 46k + 8$?

a) $(11k + 2)(k + 4)$ b) $(11k - 2)(k - 4)$ c) $(11k + 2)(k - 4)$ d) $(11k - 2)(k + 4)$

Question 24

The area of a rectangle is given by the expression $2x^2 + 11x - 40$. The width of the rectangle is $(x + 8)$. What is its length?

Length = (☐)

Question 25

Enter the simplified answer to this calculation.

$$\frac{x+5}{3x+15} \times \frac{x^2-25}{x-5} = \frac{x + \square}{\square}$$

Question 26

Enter the missing values.

$$\frac{y+7}{y^2-3y-10} + \frac{\square}{y-5} = \frac{4y + \square}{(y-5)(y+2)}$$

Question 27

$P(x) = x^2 - 5x + c$

If $P(4) = 7$, find the value of c.

$c =$ ☐

Question 28

$P(x) = (x-3)(x+3)(x-7)$

Enter the constant term of this polynomial:

☐

Question 29

Enter a number to complete this sentence.

The ***sum*** of a cubic and a quadratic polynomial will have at most ☐ terms.

Question 30

$P(x)$ has degree 5 and $Q(x)$ has degree 4.

What is the degree for the sum of $P(x)$ and $Q(x)$?

☐

Question 31

$(x^2 + 11x + 38) \div (x + 4) = (x +$ ☐) remainder ☐

Question 32

$(x^3 - 3) \div (x - 2) = x^2 +$ ☐ $x +$ ☐ remainder ☐

Question 33

$P(x) = x^3 - 3x^2 - 4x - 30$

$= (x - 5)(x^2 + 2x + c)$

What is the value of c?

$c =$ ☐

Question 34

What values of x would you substitute into a polynomial $P(x)$ to prove that $(x^2 - 64)$ was a factor of $P(x)$?

For marking purposes, enter the answers in *ascending order*.

$x =$ ☐ or ☐

Question 35

Solve $x^3 + 17x^2 + 59x - 77 = 0$.

Enter the answers in ascending order for marking purposes.

$x =$ ☐, ☐, ☐

Question 36

$y = x^3 + 2x^2 - x - 2$

This equation will graph to form a curve on the Cartesian plane.

What are the x -intercepts of this curve?

Enter the answers in ascending order for marking purposes.

$x =$ [ ], [ ], [ ]

Question 37

Select ***ALL*** the functions below that will pass through the origin.

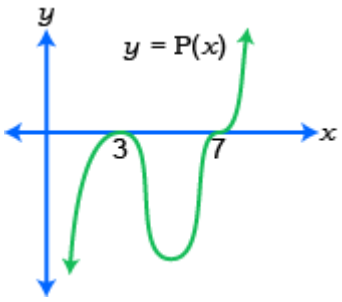
a. ☐ $x(x - 3)(x + \sqrt{5})(x - \sqrt{5})$

b. ☐ $7(x + 2)(x - 2)$

c. ☐ $x^3(x - 1)$

d. ☐ $(x - 4)^3$

Question 38



This curve has only two x -intercepts: 3 and 7.

Using the nature of those intercepts, what is the ***minimum*** possible degree for $P(x)$?

[ ]

Question 39

What is the ***y -intercept*** of $y = (x + 3)^2 + 1$?

$y =$ [ ]

Question 40

By first *completing the square* for $x^2 - 6x + \ldots = (x - 3)^2$, rearrange $y = x^2 - 6x + 16$ to find the coordinates of the vertex.

$y = x^2 - 6x + 16$

$= (x - 3)^2 + ?$

The vertex is (,).

Question 41

$-x^2 + 12x + 3 =$

a. ○ $-(x - 6)^2 + 39$

b. ○ $-(x - 6)^2 - 39$

c. ○ $-(x + 6)^2 - 33$

d. ○ $-(x + 6)^2 + 33$

Question 42

Select the parabola below that will have only *one* x-intercept.

a. ○ $y = (x - 4)^2 - 7$

b. ○ $y = (x - 4)^2 + 16$

c. ○ $y = (x - 4)^2$

Question 43

$y = 2x^2 + 8x + 5$

Determine the coordinates of the *vertex* of this parabola (its turning point).

(,)

Question 44

$5x + 12 - x^2$

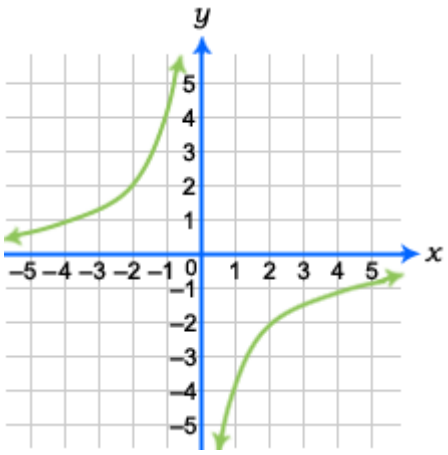
This expression:

a. ○ is positive for all values of x

b. ○ is negative for all values of x

c. ○ is positive, negative and zero depending upon the value of x

Question 45



What is the equation of the hyperbola?

a) $y = \frac{4}{x}$ b) $y = -\frac{2}{x}$ c) $y = \frac{2}{x}$ d) $y = -\frac{4}{x}$

Question 46

What is the maximum number of possible points of intersection for:

$y = ax^2 + c$ and $xy = k$?

a) 1 b) 2 c) 3 d) 4 e) 6

Question 47

To transform $y = \frac{6}{x}$ into $y = \frac{6}{x+3}$:

a. ○ translate it 3 units up

b. ○ translate it 3 units down

c. ○ translate it 3 units right

d. ○ translate it 3 units left

Question 48

The cost per person at a graduation event is modelled by a hyperbola in the form:

$$C = \frac{k}{n} + 25$$

where C is the cost per person (in dollars)

and n is the number of people attending

If 150 people attend, the cost per person is $105.

By finding the value of k , determine the cost per person if 250 people attend.

Cost per person = $