Question **1**

Not yet answered

Marked out of 1.00

What is the exact value of $\frac{1}{4} - \frac{1}{5}$?

Select one:

- $\frac{1}{20}$
- $0$
- $-\frac{1}{20}$
- $\frac{9}{20}$
- $\frac{1}{9}$

Question **2**

Not yet answered

Marked out of 1.00

What is the exact value of $3^{-2} - 7^{-1}$?

Select one:

- $-0.031746$
- $1$
- $-\frac{2}{63}$
- $\frac{2}{63}$
- $0.031746$

Question **3**

Not yet answered

Marked out of 1.00

What is the most simple form of the following expression?

$$\left(\frac{x-5}{x+1} - \frac{5}{x^2-1}\right) : \frac{x-6}{x^2-1} \qquad x \neq \pm 1,\ x \neq 6.$$

Select one:

- $\frac{1}{x}$
- $x$
- $1$
- $x - 3$
- $x + 1$

Question **4**

Not yet answered

Marked out of 1.00

What is the solution of the equation

$$\frac{2}{49}x - \frac{10}{7} = 0?$$

Answer:

Question **5**

Not yet answered

Marked out of 1.00

What is $15$ percent of $2000$?

Select one:

- $300$
- $750$
- $\frac{2000}{15}$
- $150$
- $\frac{15}{2000}$

Question **6**

Not yet answered

Marked out of 1.00

Let $x_1 < x_2$ be the real solutions of the equation $x^2 - 3x + 2 = 0$. Compute $x_1 + 2x_2$.

Select one:

- $1$
- $-5$
- $5$
- $4$
- $-4$

Question **7**

Not yet answered

Marked out of 1.00

Let $(x_1, y_1)$ be a solution of the system of equations

$$\begin{cases} 4x + 7y = 7 \\ 3x + 4y = 9 \end{cases}$$

Compute the value of $10x_1 + y_1$.

Answer:

Question **8**

Not yet answered

Marked out of 1.00

Rationalize the denominator of the following fraction:

$$\frac{1}{\sqrt{5} - \sqrt{7}}.$$

Which is the correct answer?

Select one:

- $\frac{\sqrt{5}}{\sqrt{7}}$
- $\frac{\sqrt{5}-\sqrt{7}}{2}$
- $\frac{\sqrt{5}+\sqrt{7}}{-2}$
- $\sqrt{5} - \sqrt{7}$
- $\frac{1}{\sqrt{5}+\sqrt{7}}$

Question **9**

Not yet answered

Marked out of 1.00

Determine the coordinates of the intersection point(s) of the graph of the function $g : \mathbb{R} \to \mathbb{R}$, $g(x) := 7x - 7$ with the X-axis.

Select one:

- $C(1, 0)$
- $C(-1, 0)$
- $C(7, 0)$
- $C(0, 3)$
- $C(0, 7)$

Question **10**

Not yet answered

Marked out of 1.00

How many distinct real solutions does the below equation have?

$$x^4 + 5x^2 + 6 = 0.$$

Select one:

- $0$
- $1$
- $4$
- $3$
- $2$

Question **11**

Not yet answered

Marked out of 1.00

Determine the maximal domain of the function

$$g : \mathbb{R} \to \mathbb{R}, \qquad g(x) := \sqrt{2x - 4}.$$

Select one:

- $D_f = ]4, +\infty[$
- $D_f = [2, +\infty[$
- $D_f = ]-\infty, 2[$
- $D_f = [-2, +\infty[$
- $D_f = ]-\infty, 4]$

Question **12**

Not yet answered

Marked out of 1.00

What is the minimal value of the function

$$g : \mathbb{R} \to \mathbb{R}, \qquad g(x) := x^2 - 6x + 5.$$

Select one:

- $-4$
- none of them
- $6$
- $5$
- $3$

Question **13**

Not yet answered

Marked out of 1.00

Solve the following inequality in $x \in \mathbb{R}$:

$$\frac{x^2 - 8x + 12}{x - 5} \geq 0.$$

Select one:

- $x \in ]2, 6[ \cup ]6, +\infty[$
- $x \in [6, +\infty[$
- $x \in [2, 3] \cup [6, +\infty[$
- $x \in [2, 5[ \cup [6, +\infty[$
- $x \in [2, 5[$

Question **14**

Not yet answered

Marked out of 1.00

How long is the radius of the circle given by the equation $x^2 + 6x + y^2 - 8y = 0$?

Select one:

- $5$
- $4$
- $2$
- $\sqrt{20}$
- $\sqrt{5}$

Question **15**

Not yet answered

Marked out of 1.00

What is the equation of the line passing through the points $(0, -1)$ and $(5, 9)$?

Select one:

- $y = 2x - 5$
- $y = 3x - 5$
- $y = 4x - 9$
- $y = 5x - 2$
- $y = 2x - 1$

Question **16**

Not yet answered

Marked out of 1.00

The length of the diagonal of a square is $4\sqrt{2}$. What is the length of one side?

Select one:

- $2\sqrt{2}$
- $8$
- $3\sqrt{2}$
- $2$
- $4$

Question **17**

Not yet answered

Marked out of 1.00

Let $(a_n)$ be an arithmetic progression. We know that $a_2 = -6$ and $a_6 := 22$. What is the value of $a_8$?

Answer:

Question **18**

Not yet answered

Marked out of 1.00

Which of the following expressions is an identity?

Select one:

- $\sin x = \cos(\pi - x)$
- $\sin(2x) = 4 \cos x \sin x$
- $\cos^2 x - \sin^2 x = 1$
- $\tan x + \cot x = 1$
- $\cos(2x) = 1 - 2 \sin^2 x$

Question **19**

Not yet answered

Marked out of 1.00

How many 2-element subsets does the set $\{3, 4, 5, 6, 7, 8\}$ have?

Select one:

- $18$
- $15$
- $12$
- none of them
- $36$

Question **20**

Not yet answered

Marked out of 1.00

At a competition of 8 teams, the order of the first 3 is recorded. How many different outcomes does the competition have?

Select one:

- $48$
- none of the given
- $56$
- $336$
- $265$

◄ Before you start the tests you have to read anc Jump to... Exam Test Mathematics - May 6, 2021 ►