



وزارة التربية والتعليم و التعليم الفني
الإدارة المركزية للتعليم العام
إدارة تنمية مادة الرياضيات

برعاية معالي وزير التربية والتعليم و التعليم الفني السيد الأستاذ/ محمد عبد اللطيف

وتوجيهات رئيس الإدارة المركزية للتعليم العام

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مستشار الرياضيات
أ/ منال عزقول

أداءات وتقييمات لمنهج الرياضيات البحتة لغات

للفيف الثاني الثانوي "علمي"
الفصل الدراسي الأول
للعام الدراسي 2025 / 2026

الأسبوع الثاني عشر

لجنة الإعداد

أ/ عفاف جاد

أ/ محمد الفار

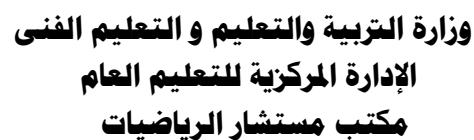
د/ محمد عبد العاطي

ترجمة

أ/ عمرو فاروق

مراجعة الترجمة

أ/ شريف البرهامي





Exercises on Some logarithm's properties

3) Without using the calculator, find each of the following (show steps of solution)

a) $\log_5 125$

b) $\frac{1}{2} \log_6 36$

c) $\log_{\frac{1}{2}} 4$

d) $\log 0.001$

Solu:

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4) Without using the calculator, find each of the following (show steps of solution)

a) $\log 4 + \log 25$

b) $\log_3 54 - \log_3 2$

c) $\frac{1}{\log_6 18} + \frac{1}{\log_3 18}$

d) $\log_4 7 \times \log_7 4$

Solu:

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5) Without using the calculator, prove that:

$$\log \frac{21}{17} - \log \frac{7}{51} + \log \frac{10}{9} = 1$$

Solu:

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6) Without using the calculator, prove that:

$$\log_7 49 + \frac{\log 25}{\log 5} + \log_3 (\log_2 8) - \log_3 27 = 2$$

Solu:

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7) Without using the calculator, prove that:

$$\log_5 9 \times \log_4 5 \times \log_3 4 = \log 100$$

Solu:

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8) Without using the calculator, prove that: $\frac{\log 27 - \log 8}{\log 3 - \log 2} = 3$

Solu:

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9) If $\log_2 5 \approx 2.322$, then find without using the calculator the value of $\log_3 45$

Solu:

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Exercises on Continuity of a function at a point

10) Discuss the continuity of the function $f: f(x) = \begin{cases} x^3 + 2 & \text{when } x \leq 1 \\ 5 - 2x & \text{when } x > 1 \end{cases}$ at $x = 1$

Solu:

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11) Discuss the continuity of the function $f: f(x) = \begin{cases} \frac{\sin 2x}{x} & \text{when } x \neq 0 \\ x + 1 & \text{when } x = 0 \end{cases}$ at $x = 0$

Solu:

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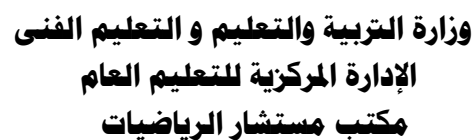
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12) If the function $f: f(x) = \begin{cases} 7 + b x & \text{when } x > 2 \\ 1 & \text{when } x = 2 \\ b - a x^2 & \text{when } x < 2 \end{cases}$ continuous at $x = 2$,
then find the values of a, b

Solu:

13) Redefine the function $f: f(x) = \frac{x^2 - 3x - 4}{x - 4}$ to be continuous at $x = 4$ (if possible)

Solu:



14) Discuss the continuity of the function $f: f(x) = \begin{cases} x^3 + 1 & \text{when } -4 < x \leq -1 \\ x + 1 & \text{when } -1 < x \leq 3 \\ x^2 - 4 & \text{when } 3 < x < 5 \end{cases}$

Solu:

is continuous on its domain, then find the value of k

Solu:

12 الرياضيات البحتة لغات - للصف الثاني الثانوي علمي الأداء المنزلي الأسبوع الثاني عشر 12

Exercises on the logarithmic function and its graph

1) If the curve of the function $f : f(x) = \log_a x$ passes through the point $(8, 3)$, then find the value of a .

Then draw the curve of the function by taking $x \in [\frac{1}{4}, 4]$ and from the graph find an approximated value for $\log_2 3$

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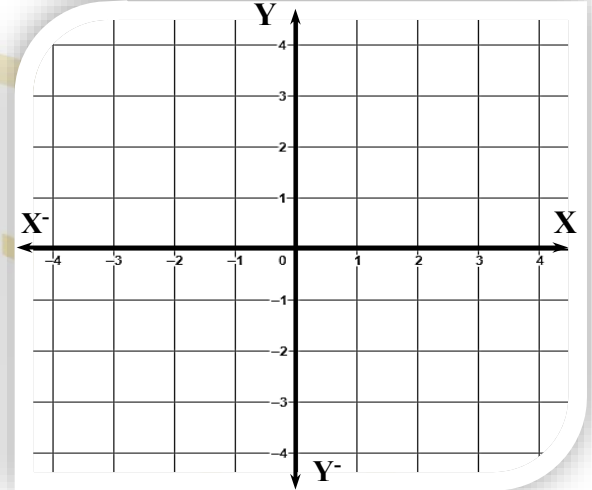
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2) Draw the graph of the function $f : f(x) = \log_2 x + 1$

by taking $x \in [\frac{1}{4}, 4]$ and from the graph investigate its range and its monotony.

Solu:

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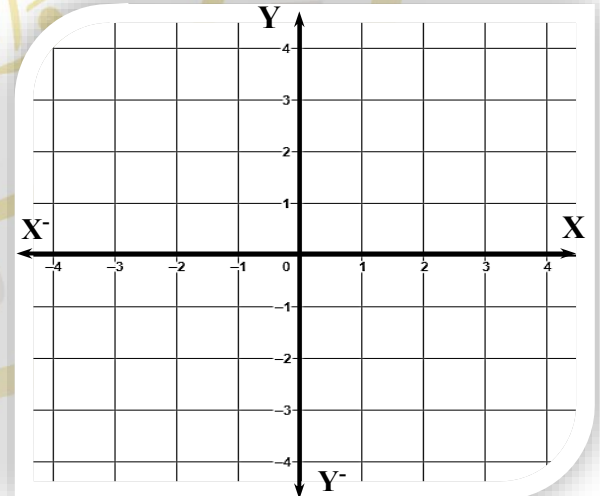
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Exercises on Some logarithms properties

3) Without using the calculator , find each of the following (show steps of solution)

a) $\log_3 27$

b) $\frac{1}{2} \log_2 16$

c) $\log_{\frac{1}{2}} 8$

d) $\log 0.01$

Solu:

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4) Without using the calculator , find each of the following (show steps of solution)

a) $\log 2 + \log 50$

b) $\log_3 63 - \log_3 7$

c) $\frac{1}{\log_4 12} + \frac{1}{\log_3 12}$

d) $\log_2 6 \times \log_6 2$

Solu:

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5) Without using the calculator , prove that:

$$\log \frac{17}{18} - \log \frac{34}{7} + \log \frac{90}{7} + 2 \log 2 = 1$$

Solu:

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6) Without using the calculator , prove that:

$$\log_4 16 + \frac{\log 49}{\log 7} + \log_2 (\log_3 9) + \log_2 \left(\frac{1}{8} \right) = 2$$

Solu:

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7) Without using the calculator , prove that:

$$\log_8 36 \times \log_7 8 \times \log_6 7 = \log 100$$

Solu:

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8) Without using the calculator, prove that: $\frac{\log 125 - \log 27}{\log 5 - \log 3} = 3$

Solu:

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9) If $\log_3 5 \approx 1.465$, then find without using the calculator the value of $\log_3 45$

Solu:

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Exercises on Continuity of a function at a point

10) Discuss the continuity of the function $f: f(x) = \begin{cases} x^2 - 7 & \text{when } x \leq 3 \\ 8 - 2x & \text{when } x > 3 \end{cases}$ at $x = 3$

Solu:

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11) Discuss the continuity of the function $f: f(x) = \begin{cases} \frac{x^4 - 16}{x^2 - 4} & \text{when } x \neq 2 \\ x + 1 & \text{when } x = 2 \end{cases}$ at $x = 2$

Solu:

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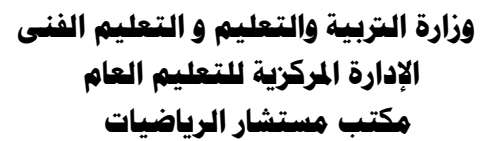
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then find the values of a , b



[illegible]



Exercises on Continuity of a function on an Interval

- 14) Discuss the continuity of the function $f: f(x) = \begin{cases} x + 4 & \text{when } -5 < x \leq -3 \\ 1 & \text{when } -3 < x \leq 0 \\ x^2 + 2 & \text{when } 0 < x < 3 \end{cases}$
on the interval $] -5, 3[$

Solu:

- 15) If the function $f: f(x) = \begin{cases} 2 + \sin x & \text{when } 0 \leq x < \frac{\pi}{2} \\ k + (\frac{\pi}{2} - x)^2 & \text{when } x \geq \frac{\pi}{2} \end{cases}$

is continuous on its domain, then find the value of k

Solu:

12 الرياضيات البحتة لغات - للصف الثاني الثانوي علمي التقييمات الأسبوعية الأسبوع الثاني عشر 12

The First Group

- 1) If the curve of the function $f: f(x) = \log_a x$ passes through the point $(16, 4)$,
then find the value of a . Then draw the curve of the function by taking $x \in [\frac{1}{4}, 4]$
and from the graph find an approximated value for $\log_2 3$

Solu:

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- 2) Without using the calculator, prove that:

$$\log_5 \frac{11}{18} - \log_5 \frac{22}{27} + \log_5 \frac{20}{3} = 1$$

Solu:

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- 3) Without using the calculator, prove that:

$$\log_7 25 \times \log_6 7 \times \log_5 6 = \log 100$$

Solu:

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- 4) Discuss the continuity of the function $f: f(x) = \begin{cases} x^2 - 11 & \text{when } x \leq 4 \\ 13 - 2x & \text{when } x > 4 \end{cases}$ at $x = 4$

Solu:

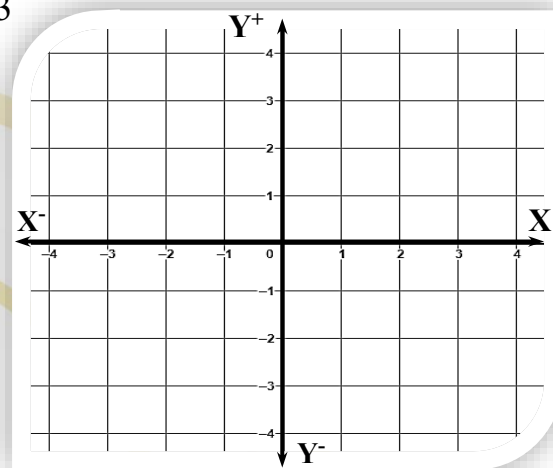
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- 5) Discuss the continuity of the function $f: f(x) = \begin{cases} x + 5 & \text{when } -4 < x \leq -1 \\ 4 & \text{when } -1 < x \leq 2 \\ x^2 + 1 & \text{when } 2 < x < 4 \end{cases}$

on the interval $] -4, 4[$

Solu:

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The Second Group

1) If the curve of the function $f : f(x) = \log_a x$ passes through the point $(\frac{1}{8}, -3)$, then find the value of a . Then draw the curve of the function by taking $x \in [\frac{1}{4}, 4]$ and from the graph investigate its range and its monotony.

Solu:

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2) Without using the calculator, prove that:

$$\log_2 \frac{13}{15} - \log_2 \frac{26}{45} + \log_2 \frac{2}{3} = 0$$

Solu:

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3) Without using the calculator, prove that:

$$\log_6 16 \times \log_5 6 \times \log_4 5 = \log 100$$

Solu:

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4) Discuss the continuity of the function $f : f(x) = \begin{cases} x^2 + 2 & \text{when } x \leq 1 \\ 1 + 2x & \text{when } x > 1 \end{cases}$ at $x = 1$

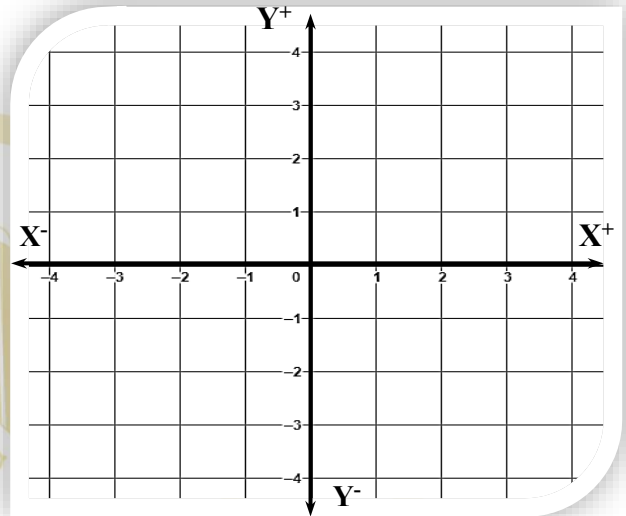
Solu:

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5) Discuss the continuity of the function $f : f(x) = \begin{cases} 2x + 6 & \text{when } -4 < x \leq -1 \\ 4 & \text{when } -1 < x \leq 2 \\ x^2 - 1 & \text{when } 2 < x < 4 \end{cases}$ on the interval $]-4, 4[$

Solu:

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The Third Group

1) If the curve of the function $f: f(x) = \log_a x$ passes through the point $(4, 2)$, then find the value of a . Then draw the curve of the function by taking $x \in [\frac{1}{4}, 4]$ and from the graph investigate its range and its monotony.

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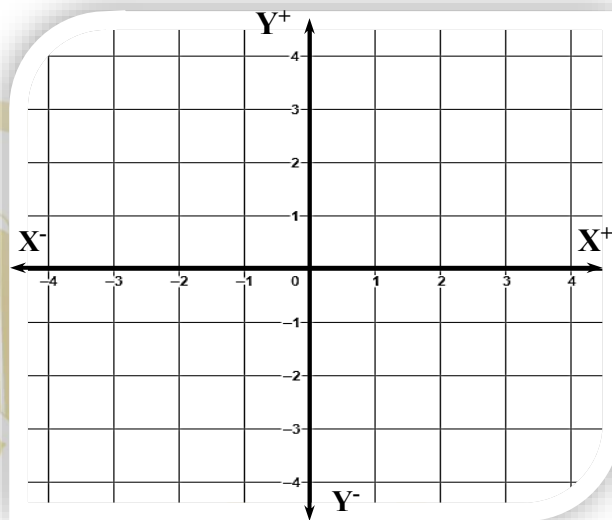
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2) Without using the calculator, prove that:

$$\log_3 \frac{13}{19} - \log_3 \frac{39}{38} + \log_3 \frac{3}{2} = 0$$

Solu:

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3) Without using the calculator, prove that:

$$\log_9 64 \times \log_5 9 \times \log_8 5 = \log 100$$

Solu:

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4) Discuss the continuity of the function $f: f(x) = \begin{cases} x^2 + 4 & \text{when } x \leq 1 \\ 3 + 2x & \text{when } x > 1 \end{cases}$ at $x = 1$

Solu:

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5) Discuss the continuity of the function $f: f(x) = \begin{cases} 3x + 7 & \text{when } -4 < x \leq -1 \\ 4 & \text{when } -1 < x \leq 2 \\ x^2 - 3 & \text{when } 2 < x < 4 \end{cases}$ on the interval $]-4, 4[$

Solu:

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