Mr.Abdulkader Amro-0566028336

10))

Apply the Quotient Rules on derivatives

Find the derivative of the function $f(x) = \frac{6x}{\sqrt{x}+1}$.

أوجد مشتقة الدالة $f(x) = \frac{6x}{\sqrt{x}+1}$.

A) $f'(x) = \frac{3\sqrt{x}-6}{(\sqrt{x}+1)^2}$

B) $f'(x) = \frac{6\sqrt{x}+6}{(\sqrt{x}+1)^2}$

C) $f'(x) = \frac{3\sqrt{x}+6}{(\sqrt{x}+1)^2}$

D) $f'(x) = \frac{6-3\sqrt{x}}{(\sqrt{x}+1)^2}$

11))

Find horizontal, vertical, and slant asymptotes using limits

Determine all vertical and slant asymptotes of $f(x) = \frac{x^3}{4-x^2}$.

حدّد كل خطوط التقارب الرأسية والمائلة لـ $f(x) = \frac{x^3}{4-x^2}$.

A) $x = 4, y = -x$

B) $x = -2, x = 2, y = 4x$

C) $x = -2, x = 2, y = x$

D) $x = -2, x = 2, y = -x$

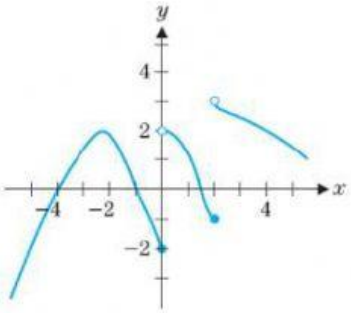
Abdulkader Amro 0566028336

LIVEWORKSHEETS

Mr.Abdulkader Amro-0566028336

12)) Find the limit of a function algebraically and graphically if it exists

Use the graph to determine $\lim_{x\to 2^-} f(x)$. استخدم التمثيل البياني لتحديد $\lim_{x\to 2^-} f(x)$.



A) -1

B) -2

C) 2

D) 3

13)) Find the derivatives of trigonometric functions using differentiation rules

Find the derivative of the function $f(x) = \tan 3x - \csc^2 x$.

أوجد مشتقة الدالة $f(x) = \tan 3x - \csc^2 x$.

A) $f'(x) = 3\sec^2 3x + 2\csc^2 x \cot x$

B) $f'(x) = 3\sec^2 3x \tan 3x + 2\csc x \cot x$

C) $f'(x) = 3\sec^2 3x - 2\csc^2 x \cot x$

D) $f'(x) = 3\sec^2 3x \tan 3x - 2\csc x \cot x$

Abdulkader Amro\ 0566028336

LIVEWORKSHEETS

Mr.Abdulkader Amro-0566028336

14)) Find limits for polynomials, rational, and trigonometric functions using theorems

Evaluate $\lim_{x\to 0} \frac{1-e^{2x}}{1-e^{x}}$.

أوجد قيمة $\lim_{x\to 0} \frac{1-e^{2x}}{1-e^{x}}$.

A) -2

B) $-\frac{1}{2}$

C) $\frac{1}{2}$

D) 2

15)) Find limits for polynomials, rational, and trigonometric functions using theorems

Given that $\lim_{x\to 0^+} \frac{1-\cos x}{x^2} = \frac{1}{2}$,

إذا كانت النهاية $\lim_{x\to 0^+} \frac{1-\cos x}{x^2} = \frac{1}{2}$،

evaluate $\lim_{x\to 0^+} \frac{\sqrt{1-\cos x}}{x}$.

أوجد قيمة $\lim_{x\to 0^+} \frac{\sqrt{1-\cos x}}{x}$.

A) $\frac{\sqrt{2}}{2}$

B) $\sqrt{2}$

C) $\frac{1}{2}$

D) 2

Abdulkader Amro-0566028336

LIVEWORKSHEETS

Mr.Abdulkader Amro-0566028336

16)) Find derivatives implicitly

Find $y'(x)$ implicitly for $x^2y^2 + 3y = 4x$.

أوجد $y'(x)$ ضمنيًا لـ $x^2y^2 + 3y = 4x$.

A) $$y'(x) = \frac{4 - 2xy^2}{2x^2y + 3}$$

B) $$y'(x) = \frac{4 - 2xy}{x^2 + 3}$$

C) $$y'(x) = \frac{4 - 2xy^2}{2x^2y - 3}$$

D) $$y'(x) = \frac{4 - 2xy}{x^2 - 3}$$

17)) Use the continuity properties to study the continuity of a function

Determine the interval(s) where $f(x) = \sqrt{9 - x^2}$ is continuous.

حدّد الفترة (الفترات) التي تكون عندها $f(x) = \sqrt{9 - x^2}$ متصلة.

A) $(-3, 3)$

B) $[-3, 3]$

C) $(-\infty, -3] \cup [3, \infty)$

D) $(-\infty, -3) \cup (3, \infty)$

Abdulkader Amro 0566028336

LIVEWORKSHEETS

Mr.Abdulkader Amro-0566028336

18)) Find infinite limits and limits at infinity

Evaluate $\lim_{x\to\frac{\pi}{2}^-} e^{\tan x}$.

أوجد قيمة $\lim_{x\to\frac{\pi}{2}^-} e^{\tan x}$.

A) $-\infty$

B) $\mathbf{0}$

C) $\mathbf{1}$

D) ∞

19)) Find the derivative of a function at a given point using the Power Rule

Find all values of x for which the tangent line to $y = x^3 - 2x + 1$ is at an angle of $45°$ with the x − axis, assuming that the angle is measured counterclockwise.

أوجد جميع قيم x والتي يشكل عندها المماس على منحنى $y = x^3 - 2x + 1$ زاوية قياسها $45°$ مع المحور x، على فرض أن الزاوية تقاس باتجاه معاكس لعقارب الساعة.

A) $x = -\sqrt{2}, x = -1$

B) $x = 1, x = \sqrt{2}$

C) $x = -1, x = 1$

D) $x = -\sqrt{2}, x = \sqrt{2}$

Abdulkader Amro 0566028336

LIVEWORKSHEETS

Mr.Abdulkader Amro-0566028336

20)) Understand the relationship between continuity and differentiability

For $f(x) = \begin{cases} x^2 + 2x, & x < 0 \\ ax + b, & x \geq 0 \end{cases}$

Find all real numbers a and b such that $f'(0)$ exists.

$f(x) = \begin{cases} x^2 + 2x, & x < 0 \\ ax + b, & x \geq 0 \end{cases}$

أوجد جميع الأعداد الحقيقية a و b بحيث يكون $f'(0)$ موجودًا.

A) $a = -2, b = 0$

B) $a = 0, b = -2$

C) $a = 0, b = 2$

D) $a = 2, b = 0$

Abdulkader Amro\ 0566028336

LIVEWORKSHEETS