

تم تحميل هذا الملف من موقع المناهج البحرينية



*للحصول على أوراق عمل لجميع الصفوف وجميع المواد اضغط هنا

<https://almanahj.com/bh>

* للحصول على أوراق عمل لجميع مواد الصف الثاني عشر اضغط هنا

<https://almanahj.com/bh/12>

* للحصول على جميع أوراق الصف الثاني عشر في مادة رياضيات ولجميع الفصول, اضغط هنا

<https://almanahj.com/bh/12math>

* للحصول على أوراق عمل لجميع مواد الصف الثاني عشر في مادة رياضيات الخاصة بـ الفصل الثاني اضغط هنا

<https://almanahj.com/bh/12math2>

* لتحميل كتب جميع المواد في جميع الفصول للـ الصف الثاني عشر اضغط هنا

<https://almanahj.com/bh/grade12>

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للتحدث إلى بوت على تلغرام: اضغط هنا

حل اختيار الفحل 1

6) $y = 9(x^2 + 16)^{-\frac{1}{2}}$
 $y' = -4.5(x^2 + 16)(2x)$

1) $\frac{dy}{dz} = z - (-z^{-2}) = z + z^{-2}$
 $\frac{dz}{dx} = 7$

7) $y' = -x^5(x^2 + 3)^{-2}(2x)$

$\frac{dy}{dx} = \frac{dy}{dz} \cdot \frac{dz}{dx}$
 $= (z + z^{-2})(7)$
 $= 7z + 7z^{-2}$

8) $y' = 8 \left(\frac{1+x}{x-3} \right)^7 \left(\frac{-1}{(x-3)^2} \right)$
 $= 8 \left(\frac{1+x}{x-3} \right)^7 \left(\frac{-2}{(x-3)^2} \right)$

2) $\frac{dz}{dx} = 24x^2$
 $\frac{dy}{dx} = (3z^z - 7)(24x^2)$
 $= 72z^z x^2 - 168x^2$

9) $3(y+2)^2 \left(\frac{dy}{dx} \right) = 2(5x-3)(5)$
 $\frac{dy}{dx} = \frac{10(5x-3)}{3(y+2)^2}$
 $\left(\frac{dy}{dx} \right)^2 = \left(\frac{10(5x-3)}{3(y+2)^2} \right)^2 = \frac{100(5x-3)^2}{9(y+2)^4}$
 L.H.S = $3(y+2)^2 \left(\frac{100(5x-3)^2}{9(y+2)^4} \right)$
 $= 100 = R.H.S$

3) $y = (z+6)^{-1}$
 $\frac{dy}{dz} = -(z+6)^{-2}$
 $\frac{dz}{dx} = 6x$
 $\frac{dy}{dx} = -(z+6)^{-2}(6x)$
 $= -6x(z+6)^{-2}$
 $\left(\frac{dy}{dx} \right)_{x=1} = -6(-1)(z+6)^{-2}$
 $= 6(z+6)^{-2}$

10) $2 \left(\frac{x}{25} \right) - 2 \left(\frac{dy}{dx} \cdot y \right) = 0$
 $\frac{dy}{dx} = \frac{x \cdot 2x}{25} \cdot \frac{2}{2y} = \frac{9x}{25y}$
 $= R.H.S = L.H.S$

4) $(f \circ g)'(x) =$
 $f'(x) = 2x - 5, g'(x) = 6$
 $(f \circ g)'(x) = [2(6) - 5](6) = 42$

5) $f'(x) = 2x^{-3}, g'(x) = 4$
 $(f \circ g)'(x) = 2(4)^{-3}(4) = \frac{1}{4}$

~~$(f \circ g)(x)$~~

$f'(x) = 2 \cos x$

$g'(x) = x^{-\frac{1}{2}}$

$[f \circ g]'(x) = 2 \cos x^{-\frac{1}{2}} (x^{-\frac{1}{2}})$
 $= 2 x^{-\frac{1}{2}} \cos x^{-\frac{1}{2}}$

$[f \circ g]'(\frac{\pi^2}{4}) = 2 (\frac{\pi^2}{4})^{-\frac{1}{2}} \cos (\frac{\pi^2}{4})^{-\frac{1}{2}}$
 $= 1.02$

(13)

~~$2x - 5(\frac{dy}{dx}) - 2y(\frac{dy}{dx}) = 0$~~

~~$2x = 5(\frac{dy}{dx}) + 2y(\frac{dy}{dx})$~~

~~$2x = (5 + 2y)(\frac{dy}{dx})$~~

~~$\frac{2x}{5+2y} = (\frac{dy}{dx})$~~

~~$(\frac{dy}{dx})_{(1,-2)} = \frac{2(1)}{5+2(-2)} = 2$~~

(12)

$f'(x) = 2 \sec^2 x^2 (\sec x^2 \tan x^2) (2x)$
 $= 4x \sec^3 x^2 \tan x^2$

$f'(\sqrt{\pi}) = 4\sqrt{\pi} (\frac{1}{\cos(\sqrt{\pi})^2})^3 \tan(\sqrt{\pi})^2$

~~غير صفر~~
 $= 0$

(14)

~~$\frac{dz}{dy} = 3y^2$~~

~~$\frac{dy}{dx} = 2 \csc x (-\csc x \cot x)$~~

~~$= -2 \csc^2 x \cot x$~~

~~$\frac{dz}{dx} = 3y^2 (-2 \csc^2 x \cot x)$~~

~~$= -2y^2 \csc^2 x \cot x$~~

~~$(\frac{dz}{dx})_{x=\frac{\pi}{4}} = -2$~~

(12)

$\frac{dy}{dx} = 4 \sin^3 x (\cos x) - 4 \cos^3 x (-\sin x)$

$= 4 \sin x \cos x (\sin^2 x + \cos^2 x)$

$= 4 \sin x \cos x$

RHS = LHS

(15)

$(\frac{dz}{dx}) = (z \circ y)'(x)$

$(z \circ y)(x) = (\csc^2 x)^3$

$= \csc^6 x$

$(z \circ y)'(x) = 6 \csc^5 x (-\csc x \cot x)$

$= -6 \csc^6 x \cot x$

$(\frac{dz}{dy})_{x=\frac{\pi}{4}} = -6 \csc^6 \frac{\pi}{4} \cot \frac{\pi}{4}$

$= -6\sqrt{2}$

(12)

(16)

$$\begin{aligned}
 f'(x) &= (\csc x - 1) \cdot 3(\csc x + 1)^2 (-\csc x \cot x) + (\csc x + 1)^3 (-\csc x \cot x) \\
 &= (-\csc x \cot x)(\csc x + 1)^2 \left[(3 \csc x - 1) + (\csc x + 1) \right] \\
 f'\left(\frac{\pi}{4}\right) &= \left(-\frac{1}{\sin \frac{\pi}{4}} \cdot \frac{1}{\tan \frac{\pi}{4}} \right) \left(\frac{1}{\sin \frac{\pi}{4}} + 1 \right)^2 \left[\left(3 \cdot \frac{1}{\sin \frac{\pi}{4}} - 1 \right) + \left(\frac{1}{\sin \frac{\pi}{4}} + 1 \right) \right] \\
 &= -4 - 3\sqrt{2} + 4\sqrt{2} = -4\sqrt{2}
 \end{aligned}$$

(17)

$$\begin{aligned}
 2x + 2y \left(\frac{dy}{dx} \right) + 1 \left(\frac{dy}{dx} \right) &= 0 \\
 \cancel{2y \left(\frac{dy}{dx} \right) + \left(\frac{dy}{dx} \right)} &= -2x \\
 \frac{dy}{dx} (2y + 1) &= -2x \\
 \frac{dy}{dx} &= \frac{-2x}{2y + 1} \\
 2 + 2 \left(\frac{d^2y}{dx^2} \right) &= 0 \Rightarrow \frac{d^2y}{dx^2} = \frac{2}{2} = 1
 \end{aligned}$$

(19)

$$\begin{aligned}
 g'(x) &= 2x \\
 (f \circ g)'(x) &= (\sec x^2)(2x) = 2x \sec x^2 \\
 (f \circ g)''(x) &= 2x (\sec x^2 \tan x^2) + \sec x^2 (2) = 2x \sec x^2 \tan x^2 + 2 \sec x^2 \\
 &= 2 \sec x^2 (x \tan x^2 + \sec x^2)
 \end{aligned}$$

(20)

$$\begin{aligned}
 f'(x) &= -4 \sin^4 x, \quad g'(x) = 3x^2 \\
 (g \circ f)'(x) &= 3(\cos 4x)(3x^2) \\
 &= 9x^2 \cos 4x \\
 (g \circ f)''(x) &= 9x^2 (-4 \sin^4 x) + \cos 4x (18x) \\
 &= -36x^2 \sin^4 x + 18x \cos 4x \\
 &= 18x(-2x \sin^4 x + \cos 4x)
 \end{aligned}$$

$$2x - 5 \left[x \cdot \frac{dy}{dx} + y \right] - 2y \left(\frac{dy}{dx} \right) = 0 \quad (11)$$

$$2x - 5x \cdot \frac{dy}{dx} - 5y - 2y \cdot \frac{dy}{dx} = 0$$

$$2x - 5y = 2y \left(\frac{dy}{dx} \right) + 5x \left(\frac{dy}{dx} \right)$$

$$\frac{2x + 5y}{2y + 5x} = \frac{(2y + 5x) \left(\frac{dy}{dx} \right)}{2y + 5x}$$

$$\frac{2(1) - 5(-2)}{2(-2) + 5(1)} = \frac{dy}{dx} (1, -2)$$

$$12 - 8 =$$

$$2x + 2y \left(\frac{dy}{dx} \right) + \left[x \cdot \frac{dy}{dx} + y \right] = 0 \quad (17)$$

$$2x + 2y \left(\frac{dy}{dx} \right) + x \left(\frac{dy}{dx} \right) + y = 0$$

$$2y \left(\frac{dy}{dx} \right) + x \left(\frac{dy}{dx} \right) = -2x - y$$

$$\frac{(2y + x) \left(\frac{dy}{dx} \right)}{2y + x} = \frac{-2x - y}{2y + x}$$

$$\left(\frac{dy}{dx} \right)_{(1,1)} = \frac{-2(1) - (1)}{2(1) + (1)} = \frac{-3}{3} = -1$$

$$2 + 2 \left(\frac{d^2y}{dx^2} \right) + 1 + \left(\frac{d^2y}{dx^2} \right) = 0$$

$$\frac{d^2y}{dx^2} = \frac{-3}{3} = -1$$