If $e^y + y^2 + xy + 8x = 9$, then y'' at the point $(1, 0)$ equals

A) -20
B) -6
C) 4
D) 24
E) None of the above

Select one:

A)

B)

C)

D)

E)

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[1] If $e^y + y^2 + xy + 8x = 9$, then y'' at the point $(1,0)$

$$e^y y' + 2yy' + y + xy' + 8 = 0$$

$$y'(e^y + 2y + x) + (y + 8) = 0$$

$\therefore \boxed{y' = -4}$ $\quad y' = \dfrac{-(y+8)}{(e^y + 2y + x)}$

نعوض $(1,0)$

$y'' \Rightarrow \quad e^y y'y' + e^y y'' + 2y'y' + 2yy'' + y' + y' + xy'' + 0 = 0$

$\overset{x\ \ y}{(1,0)}$ نعوض $\rightarrow \quad e^y (y')^2 + e^y y'' + 2(y')^2 + 2yy'' + 2y' + xy'' = 0$

$y' = -4$

$$(-4)^2 + y'' + 32 + 0 + 2(-4) + y'' = 0$$

$$16 + 2y'' + 32 - 8 = 0$$

$2y'' = -40$ $\quad \boxed{y'' = -20}$

The linear approximation of $f(x) = \frac{1}{4-x}$ at $a = 5$ is:

A) $y = x$

B) $y = 1 + x$

C) $y = -1 - x$

D) $y = -1 + x$

E) None of the above

The equation of the tangent line to the curve $(x^2+y^2)^2 = 4(x^2-y^2)$ at the point $(-\frac{\sqrt{6}}{2}, \frac{\sqrt{2}}{2})$ is

A) $y = -x + \frac{\sqrt{2}}{2}$

B) $y = x + \frac{\sqrt{2}}{2}$

C) $y = \frac{\sqrt{2}}{2}$

D) $y = -6x + \frac{\sqrt{2}}{2}$

E) $y = -\frac{\sqrt{6}}{2}x + \frac{\sqrt{2}}{2}$

Select one:

- A)
- B)
- C)
- D)
- E)

[2] The linear approximation of $f(x) = \frac{1}{4-x}$ at $a = 5$ is:-

$y - f(a) = f'(a)(x-a)$ $\quad$ * $f(5) = \frac{1}{4-5} = -1$

$y + 1 = 1(x-5)$ $\quad$ * $f'(5) = \frac{-1 * -1}{(4-x)^2} = \frac{1}{(-1)^2} = 1$

$\boxed{y = x - 6}$

---

[3] The equation of the tangent line to the curve $(x^2+y^2)^2 = 4(x^2-y^2)$ at the point $\left(-\frac{\sqrt{6}}{2}, \frac{\sqrt{2}}{2}\right)$ is

$2(x^2+y^2)(2x+2yy') = 4(2x-2yy')$

$2\left(\frac{6}{4}+\frac{2}{4}\right)(-\sqrt{6}+\sqrt{2}y') = 4(-\sqrt{6}-\sqrt{2}y')$

$\left(\frac{6}{2}+\frac{2}{2}\right)(-\sqrt{6}+\sqrt{2}y') = -4\sqrt{6}-4\sqrt{2}y'$

$-4\sqrt{6}+4\sqrt{2}y' = -4\sqrt{6}-4\sqrt{2}y'$

$y' = 0 \Rightarrow y - \frac{\sqrt{2}}{2} = 0\left(x+\frac{\sqrt{6}}{2}\right) \therefore \boxed{y = \frac{\sqrt{2}}{2}}$

N O T E B O O K

An equation of the tangent line to the curve

$y \sin 2x = x \cos 2y$ at the point $\left(\frac{\pi}{2}, \frac{\pi}{4}\right)$ is

A) $y = x + \frac{\pi}{2}$

B) $y = -\frac{x}{2}$

C) $y = x + \frac{\pi}{4}$

D) $y = \frac{\pi}{4} - x$

E) $y = \frac{x}{2}$

The linear approximation of $f(x) = \frac{1}{1-x}$ at $a = 0$ is:

A) $y = 1 + x$

B) $y = 1 - x$

C) $y = -1 - x$

D) $y = x$

E) None of the above

Select one:

- A)

D)

E)

[4] An equation of the tangent line to the curve

$y \sin 2x = x \cos 2y$ at the point $(\frac{\pi}{2}, \frac{\pi}{4})$

$y' \sin 2x + 2y \cos 2x = \cos 2y - 2xy' \sin 2y$

(عوض) → $y' \sin \pi + \frac{\pi}{2} \cos \pi = \cos \frac{\pi}{2} - \pi y' \sin \frac{\pi}{2}$

$y'(0) + \frac{\pi}{2}(-1) = 0 - \pi y'(1)$

$-\frac{\pi}{2} = -\pi y'$ $\boxed{y' = \frac{1}{2}}$

$y - \frac{\pi}{4} = \frac{1}{2}(x - \frac{\pi}{2}) \Rightarrow \boxed{y = \frac{x}{2}}$

---

[5] The linear approximation of the $f(x) = \frac{1}{1-x}$ at $a = 0$ is :-

$y - f(a) = f'(a)(x - a)$ ※ $f(a) = \frac{1}{1-0} = 1$

$y - 1 = 1(x - 0)$ ※ $f'(a) = \frac{-1 \times -1}{(1-x)^2} = \frac{1}{1^2}$

$\boxed{y = x + 1}$

The curve $y = \sin^{-1} x$ has a tangent line parallel to the line $y = x + 1$ when $x =$

A) ± 2

B) $\pm \frac{1}{3}$

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

D) ± 1

E) 0

6) The curve $y = \sin^{-1} x$ has a tangent line parallel to the line $y = x + 1$ when $x =$

$$y = \sin^{-1} x$$

$$y' = \frac{1}{\sqrt{1 - x^2}} \quad m_t \text{ (from curve)}$$

$$y' = 1 = m_L \qquad m_L \parallel m_t$$

$$\frac{1}{\sqrt{1 - x^2}} = 1$$

$$1 = \sqrt{1 - x^2} \qquad 1 = 1 - x^2 \qquad x^2 = 0$$

$$\boxed{x = 0}$$

NOTEBOOK

Given $\frac{d}{dx} f(2^x) = 4^x \ln 16$, where $x > 0$. Then $f'(3) =$

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6 Given $\frac{d}{dx} f(2^x) = 4^x \ln 16$ where $x > 0$ Then $f'(3) = ??$

$2^x = 3$

$2^x \ln 2 \, f'(2^x) = 4^x \ln 16$

$3 \ln 2 \, f'(3) = (2^x)^2 \ln 16$

$3 \ln 2 \, f'(3) = 3^2 \ln 16$

$f'(3) = \frac{9}{3} \frac{\ln 16}{\ln 2}$

$$f'(3) = 3 \frac{\ln 16}{\ln 2}$$

If $e^y + y^2 + xy - 8x = -7$, then y'' at the point $(1, 0)$ equals

A) -28
B) 20
C) 4
D) 8
E) None of the above

Select one:
A)
B)
C)
D)
E)

If $g(x) = f(2x + 1 + \tan^{-1} x)$, and $g'(0) = 6$. Then $f'(1) =$

A) 2

B) 4

C) 5

D) 6

E) None of the above

Select one:

- A)
- B)
- C)
- D)
- E)

7 If $e^y + y^2 + xy - 8x = -7$, then y'' at the point $(1,0)$ equals

$e^y y' + 2yy' + y + xy' - 8 = 0$ عوض $(1,0)$

$y' + 0 + 0 + y' - 8 = 0 \quad 2y' = 8 \quad \boxed{y' = 4}$

$y'' \Rightarrow e^y y' y' + e^y y'' + 2 y' y' + 2yy'' + y' + y' + xy'' = 0$ عوض $(1,0)$ $y' = 4$

$e^y (y')^2 + e^y y'' + 2(y')^2 + 2yy'' + 2y' + xy'' = 0$

$(4)^2 + y'' + 2(4)^2 + 0 + 2(4) + y'' = 0$

$16 + 2y'' + 32 + 8 = 0$

$2y'' = -56 \quad \boxed{y'' = -28}$

---

8 If $g(x) = f(2x + 1 + \tan^{-1} x)$, and $g'(0) = 6$. Then $f'(1) =$

$g'(x) = \left(2 + \frac{1}{1+x^2}\right) f'(2x + 1 + \tan^{-1} x)$

$g'(0) = \left(2 + \frac{1}{1+0}\right) f'(0 + 1 + 0)$

$6 = (2+1) f'(1) \Rightarrow \boxed{f'(1) = 2}$

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Suppose that $f(0) = 3, f'(0) = -3, g(0) = -2$, and $g'(0) = 2$.

If $h(x) = \dfrac{3e^x + g(x)}{f(x)\cos x}$, then $h'(0) =$

A) 1

B) -1

C) 2

D) -2

E) None of the above

[9] Suppose that $f(0) = 3$, $f'(0) = -3$, $g(0) = -2$, and $g'(0) = 2$

if $h(x) = \frac{3e^x + g(x)}{f(x)\cos x}$, then $h'(0)$

$$h'(x) = \frac{(3e^x + g(x))(f'(x)\cos x - f(x)\sin x) - ((3e^x + g'(x))(f(x)\cos x))}{(f(x)\cos x)^2}$$

$$h'(0) = \frac{(3 + (-2))(-3*1 - 3*0) - ((3+2)(3*1))}{(3*1)^2}$$

$$h'(0) = \frac{-3 \quad -15}{(9)} = \frac{-18}{+(9)} = h'(0)$$

$h'(0) = -2$

$g(x) = f(2x - 1 + \tan^{-1} x)$, and $g'(0) = 12$. Then $f'(-1) =$

A) 2

B) 4

C) 5

D) 6

E) None of the above

Select one

A)

• B)

C)

D)

E)

The linear approximation of $f(x) = \frac{1}{3-x}$ at $a = 4$ is:

A) $y = x$
B) $y = 1 + x$
C) $y = -1 + x$
D) $y = -1 - x$
E) None of the above

Select one:

A)

B)

C)

D)

E)

[10] $g(x) = f(2x - 1 + \tan^{-1} x)$, and $g'(0) = 12$ then $f'(-1) =$

$$g'(x) = \left(2 + \frac{1}{1+x^2}\right) f'(2x - 1 + \tan^{-1} x)$$

$$g'(0) = \left(2 + \frac{1}{1+0}\right) f'(0 - 1 + 0)$$

$$12 = (2+1) f'(-1)$$

$$\boxed{f'(-1) = 4}$$

---

[11] The linear approximation of $f(x) = \frac{1}{3-x}$ at $\boxed{a = 4}$ is:-

$$y - f(a) = f'(a)(x - a)$$

$$y + 1 = 1(x - 4)$$

$$\boxed{y = x - 5}$$

※ $f(a) = \frac{1}{3-4} = -1$

※ $f'(a) = \frac{-1 * -1}{(3-x)^2} = \frac{1}{(3-4)^2} = 1$

Given $f(x) = -9 - 4x^2$ for $-1 \le x \le 1$ and $g(x) = 4 - (x-4)^2$ for $2 \le x \le 6$. If l is a tangent line for both f and g, then the slope of the tangent line l equals:

Answer:

For what values of a and b is the line $2x - y = b$ tangent to the parabola $y = ax^2$ when $x = 2$.

A) $a = -\frac{1}{2}$ and $b = 2$

B) $a = \frac{1}{2}$ and $b = -2$

C) $a = -\frac{1}{2}$ and $b = -2$

D) $a = \frac{1}{2}$ and $b = 2$

E) None of the above

Select one:

A)

B)

[12] The Tangent line to the fuction $f(x) = x^2 - 4x$ is parpendicular to the line $6y + x = 0$ at $x =$

$f'(x) = 2x - 4 \Rightarrow m_t$

$y = \frac{-x}{6}$ $m_L = \frac{-1}{6}$ $\perp = \boxed{-6}$

$m_t \perp m_L$

$2x - 4 = -6$ $\boxed{x = -1}$

[13] For what values of a and b is the line $2x + y = b$ tangent to the parabola $y = ax^2$ when $x = 2$

$y' = 2ax$

$-2 = 2ax$

$-2 = 4a$

$\boxed{a = \frac{-1}{2}}$ *

$\therefore y = ax^2$

$y = \frac{-1}{2}(2)^2$ $\boxed{y = -2}$

$2x + y = b$

* $-2x + b = y$

$\boxed{y' = -2}$ $\boxed{m_L = -2}$

* $-2 \times 2 + b = -2$

$-4 + b = -2$

$\boxed{b = 2}$ *

Assume $g(x) = f(e^{kx})$, where f is a differentiable function and satisfies the following table:

x	$f(x)$	$f'(x)$
0	2	3
1	5	4

Then $g'(0) =$

A) 0

B) k

C) $2k$

D) $3k$

E) $4k$

Select one:

A)

B)

C)

14 Assume $g(x) = f(e^{Kx})$ where f is a differentiable function and satisfies the fllowing table

X	f(x)	f'(x)
0	2	3
1	5	4

Then $g'(0) =$

$g'(x) = K e^{Kx} f'(e^{Kx})$

$g'(0) = K e^{K*0} f'(e^{K*0})$

$g'(0) = K*1 f'(1)$

$g'(0) = K*4$

$g'(0) = 4K$

N O T E B O O K

If $x^2 + y^2 + xy - 8x = -7$, then y'' at the point $(1, 0)$ equals

A) -20
B) 20
C) 4
D) 8
E) None of the above

Select one:

● A)

○ B)

○ C)

○ D)

○ E)

If $e^y + y^2 + xy + 4x = 5$, then y'' at the point $(1, 0)$ equals

A) -4
B) -2
C) 8
D) 20
E) None of the above

Select one:

A)

B)

C)

D)

E)

$e^y y' + 2yy' + y + xy' + 4 = 0 \Leftarrow (1,0)$ عوض

$y' + 0 + 0 + y' = -4$

$2y' = -4$ $\boxed{y' = -2}$

$y'' \Rightarrow e^y y' y' + e^y y'' + 2y'y' + 2yy'' + y' + y' + xy'' = 0$

(1,0) عوض

$y' = -2$

$1(-2)^2 + y'' + 2(-2)^2 + 0 + (-2) + (-2) + y'' = 0$

$4 + y'' + 8 - 4 + y'' = 0$

$2y'' = -8$

$\boxed{y'' = -4}$

If $g(x) = f(2x + 5 + \tan^{-1} x)$, and $g'(0) = 18$. Then $f'(5) =$

A) 2
B) 4
C) 5
D) 6
E) None of the above

The curve $y = \tan^{-1} x$ has a tangent line parallel to th line $y = 1 + \frac{1}{5}x$ when $x =$

A) ± 3

B) $\pm \frac{1}{3}$

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

D) ± 1

E) ± 2

Select one:

A

[17] The curve $y = \tan^{-1}x$ has a tangent line parallel to the line $y = 1 + \frac{1}{5}x$ when $x =$

$y' = \frac{1}{1+x^2}$ mt (from curve)

mt // ml

$y' = \frac{1}{5}$ ml (line)

$\frac{1}{1+x^2} = \frac{1}{5}$

$1 + x^2 = 5$

$x^2 = 4$

$x = \pm 2$

[18] If $g(x) = f(2x + 5 + \tan^{-1}x)$, and $g'(0) = 18$ then $f'(5) =$

$g'(x) = (2 + \frac{1}{1+x^2}) f'(2x + 5 + \tan^{-1}x)$

$18 = 3 f'(5)$

$f'(5) = 6$

If $f(x)$ is one to one function, then the value of $\frac{d}{dx}[f^{-1}(x)]$ when $x = 2$ using the table below equals:

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

B) $\frac{1}{3}$

C) $\frac{1}{4}$

D) -1

E) -3

x	$f(x)$	$f'(x)$
1	-1	2
2	2	3
3	-3	4

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(A ○

(B ◉

(C ○

(D ○

(E ○

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[19] If $f(x)$ is one to one function, then the value of $\frac{d}{dx}[f^{-1}(x)]$ when $x = 2$ using the table below equals:

x	f(x)	f'(x)
1	-1	2
2	2	3
3	-3	4

$F(2) = 2$

$F^{-1}(2) = 2$

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

$= \frac{1}{F'(2)} = \frac{1}{3}$

he function $f(x) = (\cos x)\, e^{\sqrt{3}\, x}$, $0 < x < 2\pi$, has a horizontal tangent ine at $x =$

(A) $x = \frac{2\pi}{3}, \frac{5\pi}{3}$

(B) $x = \frac{5\pi}{6}, \frac{7\pi}{6}$

(C) $x = \frac{5\pi}{6}, \frac{11\pi}{6}$

(D) $x = \frac{\pi}{6}, \frac{7\pi}{6}$

(E) $x = \frac{\pi}{3}, \frac{4\pi}{3}$

Select one

A)

B)

C)

D)

E)

For what values of a and b is the line $2x + y = b$ tangent to the parabola $y = ax^2$ when $x = 2$.

A) $a = -\frac{1}{2}$ and $b = 2$

B) $a = \frac{1}{2}$ and $b = -2$

C) $a = -\frac{1}{2}$ and $b = -2$

D) $a = \frac{1}{2}$ and $b = 2$

E) None of the above

Select one:

- A)
- B)
- C)
- D)
- E)

[20] In function $f(x) = (\cos x) e^{\sqrt{3}x}$, $0 < x < 2\pi$, has a horizontal tangent line at $x =$

$f'(x) = -\sin x \, e^{\sqrt{3}x} + \sqrt{3} \, e^{\sqrt{3}x} (\cos x)$

$0 = -\sin x \, e^{\sqrt{3}x} + \sqrt{3} \, e^{\sqrt{3}x} (\cos x)$

$0 = e^{\sqrt{3}x} (-\sin x + \sqrt{3} \cos x)$

$e^{\sqrt{3}x} = 0$ ✗

$-\sin x + \sqrt{3} \cos x = 0 \Rightarrow \frac{\sqrt{3} \cos x}{\cos x} = \frac{\sin x}{\cos x}$

$\tan x = \sqrt{3}$

$x = \frac{\pi}{3}, \frac{4\pi}{3}$

---

[21] For what values of a and b is the line $2x - y = b$ tangent to the parabola $y = ax^2$ when $x = 2$

$y' = 2ax \Rightarrow$ (from curve) $\quad 2 = 2ax$

$y = 2x - b \quad$ [2] → from line $\quad 2 = 2 * a * 2$

$2 = 4 - b \quad$ $a = \frac{1}{2}$

$b = -2 \quad$ $y = \frac{1}{2} \times 4$

$y = 2$

Let $f(x) = \frac{\pi}{2} + 5x - \cos^{-1}(x)$, then the equation of the normal line to the curve at the point (0, 0) is

A) $y = x + 2$
B) $y = 6x$
C) $y = -x + 2$
D) $y = -\frac{1}{6}x$
E) $y = \frac{1}{6}x$

Select one:

A)

B)

C)

D)

E)

Given a function with $f(-3) = 7$ and $f'(-3) = \frac{5}{3}$, what is

$$\lim_{h \to 0} \frac{5h}{f(h-3)-7}?$$

A) $\frac{1}{3}$

B) 15

C) $\frac{5}{3}$

D) 0

E) 3

Select one:

- A)
- B)
- C)
- D)
- E)

صاحب الهمة لا يقف حتى يتم المهمة

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[22] Let $f(x) = \frac{\pi}{2} + 5x - \cos^{-1}(x)$, then the equation of the normal line to the curve at the point (0,0) is

$f'(x) = 0 + 5 + \frac{1}{\sqrt{1-x^2}}$ ← (0,0)

$f'(x) = 6$ normal line ⇒ $\frac{-1}{6}$

$y - 0 = \frac{-1}{6}(x - 0)$

$\boxed{y = \frac{-1}{6}x}$

[23] Given a function with $f(-3) = 7$ and $f'(-3) = \frac{5}{3}$, what is

$\lim_{h \to 0} \frac{5h}{f(h-3) - 7}$?

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$= \frac{5}{f'(h-3) * 1} = \frac{5}{f'(-3)} = \frac{5}{\frac{5}{3}} = \boxed{3}$

Let $f(x) = -5x - 10 + \ln x$. Then, $(f^{-1})'(-15) =$

A) $\frac{1}{15}$

B) $-\frac{1}{4}$

C) $\frac{1}{4}$

D) $\frac{1}{-85+\ln 15}$

E) $-\frac{1}{15}$

24 Let $f(x) = -5x - 10 + \ln x$ then, $(f^{-1})'(-15) =$

$$(f^{-1})'(-15) = \frac{1}{f'(f^{-1}(-15))}$$

$f(x) = -15$

$-5x - 10 + \ln x = -15$

$x = 1$ so $f^{-1}(-15) = 1$

$$= \frac{1}{f'(f^{-1}(-15))}$$

$$= \frac{1}{f'(1)}$$

$f'(x) = -5 - 0 + \frac{1}{x}$

$f'(1) = -5 + 1$

$f'(1) = -4$

$$(f^{-1})'(-15) = -\frac{1}{4}$$

Let $f(x) = \frac{\pi}{2} + 5x - \cos^{-1}(x)$, then the equation of the normal line to the curve at the point $(0,0)$ is

A) $y = x + 2$
B) $y = 6x$
C) $y = -x + 2$
D) $y = -\frac{1}{6}x$
E) $y = \frac{1}{6}x$

Select one:

A)

B)

C)

The equation of the tangent line to the curve $(x^2 + y^2)^2 = 4(x^2 - y^2)$ at the point $\left(-\frac{\sqrt{6}}{2}, \frac{\sqrt{2}}{2}\right)$ is

A) $y = -x + \frac{\sqrt{2}}{2}$

B) $y = x + \frac{\sqrt{2}}{2}$

C) $y = \frac{\sqrt{2}}{2}$

D) $y = -6x + \frac{\sqrt{2}}{2}$

E) $y = -\frac{\sqrt{6}}{2}x + \frac{\sqrt{2}}{2}$

Select one:

A)

B)

C)

D)

E)

The equation of the tangent line to the curve $(x^2+y^2)^2 = 4(x^2-y^2)$ at the point $\left(-\frac{\sqrt{6}}{2}, \frac{\sqrt{2}}{2}\right)$ is

A) $y = -x + \frac{\sqrt{2}}{2}$

B) $y = x + \frac{\sqrt{2}}{2}$

C) $y = \frac{\sqrt{2}}{2}$

D) $y = -6x + \frac{\sqrt{2}}{2}$

E) $y = -\frac{\sqrt{6}}{2}x + \frac{\sqrt{2}}{2}$

Suppose that $f(0) = 3, f'(0) = -3, g(0) = -2$, and $g'(0) = 2$.

If $h(x) = \dfrac{3e^x + g(x)}{f(x)\cos x}$, then $h'(0) =$

A) 1

B) −1

C) 2

D) −2

E) None of the above

Select one:

- ○ A)
- ○ B)
- ◉ C)
- ○ D)

If $g(x) = f(2x + 5 + \tan^{-1} x)$, and $g'(0) = 18$. Then $f'(5) =$

A) 2
B) 4
C) 5
D) 6
E) None of the above

Select one:

- A)
- B)
- C)
- ● D)
- E)

Given a function with $f(-3) = 7$ and $f'(-3) = 3$, what is $\lim_{h \to 0} \frac{5h}{f(h-3)-7}$?

A) $\frac{1}{3}$
B) 15
C) $\frac{5}{3}$
D) 0
E) 3

Select one:

A)

B)

C)

D)

E)

Given $f(x) = -9 - 4x^2$ for $-1 \le x \le 1$ and $g(x) = 4 - (x-4)^2$ for $2 \le x \le 6$. If l is a tangent line for both f and g, then the slope of the tangent line l equals:

Answer

If $\ln[\cosh(2x) + \sinh(2x)] - \ln[\cosh(x) - \sinh(x)] = 3$

then $x =$

A) 1

B) 0

C) 3

D) $\frac{1}{3}$

E) None of the above

If $\ln[\cosh(x) + \sinh(x)] - \ln[\cosh(2x) - \sinh(2x)] = 6$ then $x =$

A) 1

B) 0

C) 3

D) $-\frac{1}{3}$

E) None of the above

Select one

A

e

B

If $f(x)$ is one to one function, then the value of $\frac{d}{dx}[f^{-1}(x)]$ when $x = 2$ using the table below equals:

x	$f(x)$	$f'(x)$
1	2	-1/3
2	-1	3
3	-3	4

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

B) $\frac{1}{3}$

C) $\frac{1}{4}$

D) -1

E) -3

Select one:

A)

● B)

C)

D)

E)

The equation of the tangent line to the curve $(x^2 + y^2)^2 = 4(x^2 - y^2)$ at the point $(-\frac{\sqrt{6}}{2}, \frac{\sqrt{2}}{2})$ is

A) $y = -x + \frac{\sqrt{2}}{2}$

B) $y = x + \frac{\sqrt{2}}{2}$

C) $y = \frac{\sqrt{2}}{2}$

D) $y = -6x + \frac{\sqrt{2}}{2}$

E) $y = -\frac{\sqrt{6}}{2}x + \frac{\sqrt{2}}{2}$

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(A ○

(B ○

(C ○

(D ○

(E ○

Question **15**

Not yet answered

Marked out of 1

Flag question

Given $f(x) = -9 - 4x^2$ for $-1 \leq x \leq 1$ and $g(x) = 4 - (x - 4)^2$ for $2 \leq x \leq 6$. If l is a tangent line for both f and g, then the slope of the tangent line l equals:

Answer:

Question 9

Not yet answered

Marked out of 1

Flag question

Suppose that $f(0) = -2$, $f'(0) = 2$, $g(0) = 2$, and $g'(0) = -2$.

If $h(x) = \frac{2e^x + g(x)}{f(x)\cos x}$, then $h'(0) =$

A) 1

B) −1

C) 2

D) −2

E) None of the above

Select one:

A)

B)

C)

D)

E)

Clear my choice

If $\ln[\cosh(4x) + \sinh(4x)] + \ln[\cosh(2x) - \sinh(2x)] = 1$ then $x =$

A) 1
B) 0
C) 3
D) $\frac{1}{2}$
E) None of the above

Select one:

A)

B)

C)

D)

E)

Let $f(x) = \frac{\pi}{2} + 5x - \cos^{-1}(x)$, then the equation of the normal line to the curve at the point $(0, 0)$ is

A) $y = x + 2$
B) $y = 6x$
C) $y = -x + 2$
D) $y = -\frac{1}{6}x$
E) $y = \frac{1}{6}x$

Select one:

A)

B)

C)

D)

E)

An equation of the tangent line to the curve

$y \sin 2x = x \cos 2y$ at the point $\left(\frac{\pi}{2}, \frac{\pi}{4}\right)$ is

A) $y = x + \frac{\pi}{2}$

B) $y = -\frac{x}{2}$

C) $y = x + \frac{\pi}{4}$

D) $y = \frac{\pi}{4} - x$

E) $y = \frac{x}{2}$

Select one

A

Question **5**

Not yet answered

Marked out of 1

Flag question

If $\ln|\cosh(3x) + \sinh(3x)| + \ln|\cosh(x) - \sinh(x)| = 6$ then $x =$

A) 1
B) 0
C) 3
D) $\frac{2}{3}$
E) None of the above

Select one:

A)

B)

C)

D)

E)

سؤال 7

لم يتم الاجابة عليه بعد

الدرجة من 1

علم هذا السؤال

The tangent line to the function $f(x) = x^2 - 4x$ is perpendicular to the line $6y + x = 0$ at $x =$

(A) -1
(B) 3
(C) 4
(D) 5
(E) -2

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(A

(B

(C

(D

(E

The equation of the tangent line to the curve $(x^2+y^2)^2 = 4(x^2-y^2)$ at the point $(-\frac{\sqrt{6}}{2}, \frac{\sqrt{2}}{2})$ is

A) $y = -x + \frac{\sqrt{2}}{2}$

B) $y = x + \frac{\sqrt{2}}{2}$

C) $y = \frac{\sqrt{2}}{2}$

D) $y = -6x + \frac{\sqrt{2}}{2}$

E) $y = -\frac{\sqrt{6}}{2}x + \frac{\sqrt{2}}{2}$

Select one:

- A)
- B)
- C)
- D)
- E)

Suppose that $f(0) = -1, f'(0) = -8, g(0) = -4$, and $g'(0) = 4$.

If $h(x) = \frac{5e^x + g(x)}{f(x)\cos x}$, then $h'(0) =$

A) 1
B) −1
C) 2
D) −2
E) None of the above

Select one:

- A)
- B)
- C)
- D)
- E)

The function $f(x) = (\sin x)\, e^{-\sqrt{3}\, x}$, $0 < x < 2\pi$, has a horizontal tangent line at $x =$

(A) $x = \frac{2\pi}{3}, \frac{5\pi}{3}$

(B) $x = \frac{5\pi}{6}, \frac{7\pi}{6}$

(C) $x = \frac{5\pi}{6}, \frac{11\pi}{6}$

(D) $x = \frac{\pi}{6}, \frac{7\pi}{6}$

(E) $x = \frac{\pi}{3}, \frac{4\pi}{3}$

Select one:

- A)
- B)
- C)
- D)
- E)