

PRINTABLE VERSION

Quiz 18

Question 1

Differentiate the given function $y = \cosh(6x^2 + 4)$.

- a) ☐ $-\sinh(12x)$
- b) ☐ $12x \sinh(6x^2 + 4)$
- c) ☐ $(6x^2 + 4) \sinh(6x^2 + 4)$
- d) ☐ $\sinh(6x^2 + 4)$
- e) ☐ $-12 \sinh(6x^2 + 4)$

Question 2

Differentiate the given function $y = \sqrt{\sinh(10x)}$.

- a) ☐ $\frac{-10}{\sqrt{\sinh(10x)}}$
- b) ☐ $\frac{-5 \cosh(10x)}{\sqrt{\sinh(10x)}}$
- c) ☐ $\frac{\cosh(10x)}{2 \sqrt{\sinh(10x)}}$

d) ☐ $\frac{10}{\sqrt{\sinh(10x)}}$

e) ☐ $\frac{5 \cosh(10x)}{\sqrt{\sinh(10x)}}$

Question 3

Differentiate the given function $y = \sinh(10x) \cosh(10x)$.

a) ☐ $10 [\cosh(10x)]^2 - 10 [\sinh(10x)]^2$

b) ☐ 1

c) ☐ 10

d) ☐ $10 [\cosh(10x)]^2 + 10 [\sinh(10x)]^2$

e) ☐ $10 [\cosh(10x)]^2 - [\sinh(10x)]^2$

Question 4

Differentiate the given function $y = \frac{\sinh(4x)}{\cosh(4x) - 7}$.

a) ☐ $\frac{4 - 28 \cosh(4x)}{(\cosh(4x) - 7)^2}$

b) ☐ $\frac{4}{(\cosh(4x) - 7)^2}$

c) ☐ $\frac{16 - 112 \cosh(4x)}{(\cosh(4x) - 7)^2}$

- d) ☐ $\frac{7}{(\cosh(4x) - 7)^2}$
- e) ☐ $\frac{1 - 7 \cosh(4x)}{\cosh(4x) - 7}$

Question 5

Differentiate the given function $y = \cosh(\ln(2x^4))$.

- a) ☐ $x^3 + \frac{1}{x^5}$
- b) ☐ $4x^3 - \frac{2}{x^4}$
- c) ☐ $x^3 - \frac{4}{x^5}$
- d) ☐ $4x^3 + \frac{1}{x^4}$
- e) ☐ $4x^3 - \frac{1}{x^5}$

Question 6

Differentiate the given function $y = \arctan(\cosh(2x))$.

- a) ☐ $\frac{-\cosh(2x)}{(\sinh(2x))^2 - 1}$
- b) ☐ $\frac{2 \sinh(2x)}{1 + (\cosh(2x))^2}$

- c) ☐ $\frac{-2 \sinh(2x)}{1 + (\cosh(2x))^2}$
- d) ☐ $\frac{2 \sinh(2x)}{1 + \cosh(2x)}$
- e) ☐ $\frac{\sinh(2x)}{1 + (\cosh(2x))^2}$

Question 7

Differentiate the given function $y = \ln(\sinh(5x))$.

- a) ☐ $\frac{5}{\sinh(5x)}$
- b) ☐ $\frac{-5 \cosh(5x)}{\sinh(5x)}$
- c) ☐ $\frac{5 \cosh(5x)}{\sinh(5x)}$
- d) ☐ $\frac{\cosh(5x)}{\sinh(5x)}$
- e) ☐ $\frac{5}{\cosh(5x)}$

Question 8

Differentiate the given function $y = (\cosh(10x))^x$.

- a) ☐ $(\sinh(10x))^x \left(\ln(\sinh(10x)) + \frac{10x \cosh(10x)}{\sinh(10x)} \right)$

- b) ☐ $(\cosh(10x))^x \left(\ln(\cosh(10x)) + \frac{10 \sinh(10x)}{\cosh(10x)} \right)$
- c) ☐ $(\cosh(10x))^x \left(\ln(\cosh(10x)) + \frac{10}{\cosh(10x)} \right)$
- d) ☐ $(\sinh(10x))^x \left(\ln(\cosh(10x)) + \frac{10}{\cosh(10x)} \right)$
- e) ☐ $(\cosh(10x))^x \left(\ln(\cosh(10x)) + \frac{10x \sinh(10x)}{\cosh(10x)} \right)$

Question 9

Find the absolute extreme values of $y = -\frac{65}{2} \cosh(x) + \frac{63}{2} \sinh(x)$.

- a) ☐ absolute max: $f(\ln(16)) = -16$
- b) ☐ absolute max: $f(\ln(8)) = \sinh(4)$
- c) ☐ absolute max: $f(\ln(8)) = -8$
- d) ☐ absolute min: $f(\ln(8)) = \cosh(4)$
- e) ☐ absolute min: $f(\ln(8)) = -8$

Question 10

Determine A , B , and C so that $y = A \cosh(Cx) + B \sinh(Cx)$ satisfies the conditions $y'' - 9y = 0$, $y(0) = 1$, $y'(0) = 3$. Take $C > 0$.

- a) ☐ $[A = 4, B = 1/3, C = 3]$
- b) ☐ $[A = 1, B = 1, C = 3]$
- c) ☐ $[A = 1, B = 2, C = 3]$
- d) ☐ $[A = 2, B = 1, C = 1]$
- e) ☐ $[A = 3, B = 1, C = 1]$