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Points 100  **Published**

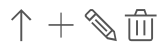
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Questions

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## Group 1

Group Name

Pick 2 questions, 5 pts per question Pick  questions,  pts per question

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Question 1 pts



$$\frac{d}{dx} \operatorname{cosec} x = ?$$

☐  $-\operatorname{cosec} x \cdot \cot x$ ☐ None of the given☐  $\operatorname{cosec} x \cdot \cot x$ ☐  $\operatorname{cosec}^2 x$ 

Question 1 pts



$$\frac{d}{dx} a^x = ? \text{ where } a \text{ is any constant.}$$

☐  $a^x \log a$ ☐  $x^a \log a$

☐  $xa^{x-1}$ 
☐ None of the above


Question 1 pts



Consider the function  $f(x) = \begin{cases} 1 & x \leq 0 \\ 2 & x > 0 \end{cases}, x \in \mathbb{R}$  what is the limit of  $f(x)$  as  $x$  approaches to 0.

☐ The limit does not exists

☐ 2

☐ 1

☐ 0


Question 1 pts



Consider the function  $f(x) = (x - 2)^2 - 1, x \in \mathbb{R}$  what is the value of  $\lim_{x \rightarrow 0} f(x)$ ?

☐ 3

☐ -2

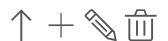
☐ 0

☐ -1


## Group 2

 Pick 7 questions, 10 pts per question Pick  questions,  pts per

question






Question 1 pts



The function  $g(x) = |x - 1|$  is continuous at  $x=1$ . is the statement true or false?

☐ True

☐ False



Question 1 pts



Let  $f$  and  $g$  be two function such that  $\lim_{x \rightarrow a} f(x) = L_1$  and  $\lim_{x \rightarrow a} g(x) = L_2$ , where  $L_1$  and  $L_2$  are two real numbers, then which of the following statements are True (select all True statements)?

☐  $\lim_{x \rightarrow a} (f(x) \pm g(x)) = \lim_{x \rightarrow a} f(x) \pm \lim_{x \rightarrow a} g(x) = L_1 \pm L_2$

☐  $\lim_{x \rightarrow a} (f(x) \cdot g(x)) = \lim_{x \rightarrow a} f(x) \cdot \lim_{x \rightarrow a} g(x) = L_1 L_2$

☐  $\lim_{x \rightarrow a} \frac{f(x)}{g(x)} = \frac{\lim_{x \rightarrow a} f(x)}{\lim_{x \rightarrow a} g(x)} = \frac{L_1}{L_2}$  for  $L_2 \neq 0$

☐ All choices are correct



Question 1 pts



What is the derivative of the function  $f(x) = \sin(x^2 + 2x + 1)$  with respect to  $x$ ?

☐  $(2x + 2)\cos(x^2 + 2x + 2)$

☐  $-(2x + 2)\cos(x^2 + 2x + 2)$

☐  $(2x + 2)\sin(x^2 + 2x + 2)$

☐ None of the given



Question 1 pts



A function  $f(x)$  is continuous at a point  $a$  if and only if

☐  $f(x)$  is defined

☐  $\lim_{x \rightarrow a} f(x) \text{ exists}$

☐  $\lim_{x \rightarrow a} f(x) = f(a)$

☐ All of the given answers should be correct



Question 1 pts



Find the derivative of the following function with respect to x.

$$f(x) = \cos^2 x - \cos x^2$$

☐ None of the given

☐  $2\cos x \cdot \sin x - 2x\cos x^2$

☐  $-2\cos x \cdot \sin x - 2x\cos x^2$

☐  $2\cos x \cdot \sin x + 2x\cos x^2$



Question 1 pts



What is the derivative of  $f(x) = e^{-4x^7}$  with respect to x?

☐  $-28x^6 e^{-4x^7}$

☐  $-28x^6 e^{-4x^6}$

☐  $28x^6 e^{-4x^7}$

☐ None of the given



Question 1 pts



Find the equation of the tangent of the line  $y = x^2$  at  $x=3$ .

- ☐  $y = 6x - 9$
- ☐  $y = 6x + 9$
- ☐  $y = -6x + 9$
- ☐ None of the given



Question 1 pts



Find the derivative of  $f(x) = \sqrt[3]{x}$ , with respect to  $x$ .

☐  $\frac{1}{3}x^{-\frac{2}{3}}$

☐  $\frac{1}{3}x^{\frac{2}{3}}$

☐  $\frac{1}{3\sqrt[3]{x^2}}$

☐ None of the given



Question 1 pts



Compute the derivative of the following functions with respect to  $x$ .

$f(x) = (x^3 - 3x^2 - 7)^3$

☐  $3(3x^2 - 6x)(x^3 - 3x^2 - 7)^2$

☐  $(3x^2 - 6x)(x^3 - 3x^2 - 7)^2$

☐  $-3(3x^2 - 6x)(x^3 - 3x^2 - 7)^2$

☐ None of the given



# Group 3

Pick 1 questions, 20 pts per question Pick

questions,

pts per

question

↑ + ✎ 🗑️

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Question 1 pts



Let  $f(x) = 2x^3 - 15x^2 + 24x + 6$ . The stationary point for the curve  $y = f(x)$  are:

- ☐ Local maximum at (1,17) and local minimum at (4,-10)
- ☐ Local maximum at (4,-10) and local minimum at (1,17)
- ☐ Local maximum at (-4,-10) and local minimum at (-1,17)
- ☐ None of the given



Question 1 pts



let  $f(x) = x^2 + 3x - 1$  what is the equation of tangent line to the curve  $y = f(x)$ , at  $x = \frac{-1}{2}$ ?

- ☐  $y = 2x - \frac{5}{4}$
- ☐  $y = 2x + \frac{5}{4}$
- ☐  $y = -2x - \frac{5}{4}$
- ☐  $y = 4x - \frac{5}{4}$

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