

Business Calculus Midterm exam Part II

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Name: _____

1. Simplify

$$(16^{3/4})^{-1/3}(64)^{-1/4}.$$

2. Simplify

$$\frac{|-3-8|-6|7-(-4)|}{8|9-12(1-4)|}.$$

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3. Evaluate the limits:

$$\lim_{x \rightarrow 4} \frac{x - 4}{x^2 - 16}.$$

4. Evaluate the limits: $\lim_{x \rightarrow 1} f(x)$, where

$$f(x) = \begin{cases} x^2 + 2 & x < 1, \\ x^3 & x \geq 1 \end{cases}$$

5. Determine if the function $f(x) = \sqrt{3x-4}/x + 2$ is continuous on the interval $(-5, 20)$.

6. Use the definition of derivative to find $f'(x)$ if $f(x) = \frac{1}{2-x}$.

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7. Find an equation of the tangent line to the graph of

$$y = \frac{x^2 - 9}{x - 3}$$

at $x = 4$.

8. Find $f'(x)$ if

(a) $f(x) = \left(4 - \frac{x^2}{1+x^2}\right) (2 - 1/x^2);$

(b) $f(x) = (3 + \frac{1}{1+x})^{15} \sqrt{x^2 - 12}.$

9. Find $f'(x)$ if

$$f(x) = \frac{1}{\sqrt{3x^2 - 4x + 5}}$$

10. Find $f'(x)$ if

$$f(x) = \sqrt{\frac{2x - 1}{3x^3 - 5x + 6}}$$