Ch. 7 - Limits - Board Problems

Solve for x.

1) $e^{3x} = 4e^{x}$

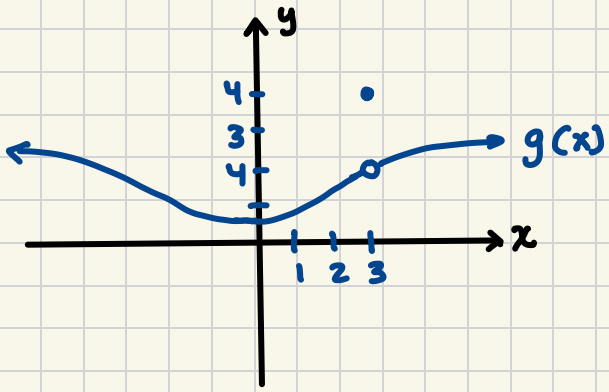
2) $e^{2x^2} + e^{5x} = -e^{2}$

3) Simplify.
$2\ln x + \ln x^3 = f(x)$

4) Write the inverse function for 3)

5) Write out : $(2x-8)^2$

Ch. 7 - Review of Limits



$g(3) =$ ____ but

$\lim_{x \to 3} g(x) =$ ____

1. $\lim_{x \to a} C = C.$

   The limit of a constant is the constant.

2. $\lim_{x \to a} (u + v - w) = \lim_{x \to a} u + \lim_{x \to a} v - \lim_{x \to a} w = A + B - C$

   The limit of the sum is the sum of the limits.

3. $\lim_{x \to a} \frac{u}{v} = \frac{A}{B}$ if B is not zero.

   The limit of the quotient is the quotient of the limits as long as the denominator $\neq 0$.

4. $\lim_{x \to a} Cu = C \lim_{x \to a} u$

   The limit of a constant times a function is the constant times the limit of the function

5. $\lim_{x \to a} (uvw) = ABC$

   The limit of the product is the product of the limits.

Ex. 1 $\lim_{x \to 8} 5 =$ _____

Ex. 2 $\lim_{x \to 2} (x^2 + 4x) =$ _____

Ex. 3 $\lim_{x \to 2} \frac{(x^2-9)}{(x+2)} =$

$\lim_{x \to 3} \frac{x^2-9}{x+3} =$

$\lim_{x \to -3} \frac{x^2-9}{x+3} =$

Ex. 4 $\lim_{\theta \to \frac{\pi}{6}} 3\sin\theta = 3 \lim_{\theta \to \frac{\pi}{6}} \sin\theta =$

Ex. 5 $\lim_{x \to 0} x \cdot \cos x = \lim_{x \to 0} x \cdot \lim_{x \to 0} \cos x =$

Ex. 6 $\lim_{x \to 1} \frac{(x^2-1)}{(x-1)} =$

Ex. 7 $\lim_{s \to a} \frac{(s^2-a^2)}{(s-a)}$

Evaluate the following limit.

1. $\lim_{x \to 2} (x^2 - 5)$

2. $\lim_{x \to -1} \frac{x^2 + 2}{2x^2 - 3}$

3. $\lim_{\theta \to \frac{\pi}{2}} -3\cos(\theta)$

4. $\lim_{x \to 1} \frac{\ln(x) + 2}{3}$

5. $\lim_{t \to 1} \frac{e^{2t} + e^2}{4}$

6. $\lim_{x \to -2} \frac{x^2+2x}{x+2}$

7. $\lim_{t \to -2} \frac{t^2+3t+2}{t^2+t-2}$

8. $\lim_{\theta \to 0} \left(\frac{\sin^2(\theta)+1}{\cos(\theta)+1} \right)$

9. $\lim_{\theta \to 0} \left(\frac{\csc(\theta)-\cos(\theta)}{3} \right)$

10. $\lim_{x \to e} \frac{\ln^2(x)-1}{\ln(x)-1}$