

- (6) 1. Simplify the expressions

(a) $\log_3 \sqrt{3}$

(b) $\ln(e^{\sin x})$

- (3) 2. Solve for
- k
- in
- $e^{5k} = 1/32$
- .

- (3) 3. Find the exact value of
- $\arcsin\left(-\frac{\sqrt{3}}{2}\right)$

- (18) 4. Evaluate the limit, if it exists.

(a) $\lim_{x \rightarrow 1} \frac{x^2 + 4x - 5}{x^2 - 1}$

(b) $\lim_{h \rightarrow 0} \frac{(2+h)^3 - 8}{h}$

(c) $\lim_{x \rightarrow 2+} \frac{2-x}{|2-x|}$

(d) $\lim_{\theta \rightarrow 0} \frac{\theta}{\tan 2\theta}$

- (7) 5. Determine the infinite limit.
- $\lim_{t \rightarrow -1} \frac{t}{(t+1)^2}$

- (12) 6. Let
- $f(x) = \begin{cases} x+2 & \text{if } x \leq -1 \\ -x & \text{if } -1 < x < 1 \\ x+1 & \text{if } x \geq 1 \end{cases}$

(a) Find all points where f is discontinuous.(b) Sketch the graph of $f(x)$

- (28) 7. Differentiate the function.

(a) $f(x) = -2x^{11} + \sqrt{x} + x^{-1}$

(b) $f(x) = (x^4 + x)e^x$

(c) $h(s) = \frac{5s^3 + 8s}{s^4 + 14}$

- (11) 8. Find an equation of the tangent line to the curve

$$y = x^{1/2} + x^{-1/2} \quad \text{at } x = 4.$$

- (12) 9. Find the derivative
- dy/dx
- of
- $y = f(x)$
- at
- $x = 1$
- using the definition of derivative*
- $(\lim_{h \rightarrow 0} (f(x+h) - f(x))/h)$
- if

$$f(x) = \frac{1}{2x+1}.$$