

1. [11 points]

a. [8 points] Indicate if each of the following statements are true or false by circling the correct answer. No justification is required.

i) If  $f(3) = 4$  then the point  $(4, 3)$  is on the graph of  $y = f^{-1}(x)$ .

True                  False

ii) If a polynomial  $p(x)$  has odd degree, then the function  $p(x)$  is an odd function.

True                  False

iii) If the function  $f(x)$  is odd, then the function  $g(x) = xf(x)$  is an even function.

True                  False

iv) The function  $h(x) = 2 - (x - 4)^2$  with domain  $x \geq 4$  is an invertible function.

True                  False

b. [2 points] Compute the value of the following limits:

$$\lim_{x \rightarrow -\infty} \frac{2e^x + 1}{5 + x} = \underline{\hspace{2cm}} \qquad \lim_{x \rightarrow -3^-} \frac{-1}{x + 3} = \underline{\hspace{2cm}}$$

c. [1 point] Let  $f(x) = x^{\frac{1}{5}}$  and  $g(x) = 1 + \log(x)$ . Which of the functions grows more rapidly as  $x \rightarrow \infty$ ? Circle your answer.

$f(x)$

$g(x)$

It can't be determined.