MATH 118: Quiz 7

Name: key

Directions:

* Show your thought process (commonly called "showing your work") when solving each problem for full credit.
* If you do not know how to solve a problem, try your best and/or explain in English what you would do.
* Good luck!

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1. Find all horizontal and vertical asymptotes for the rational function

$$r(x) = \frac{x^2 - 3x}{x^2 - 3x + 2}$$

Horizontal:

$n = 2 = m$ so

$$y = \frac{a_n}{b_m} = \frac{1}{1} = 1$$

Vertical:

Solve $x^2 - 3x + 2 = 0$ (1 −2, 1 −1)

$(x-2)(x-1) = 0$

$x - 2 = 0 \quad x - 1 = 0$

$x = 2 \quad x = 1$

2. Consider the function $f(x) = 16^x$. Evaluate and fully simplify the following:

(a) $f(0) = 16^0 = \boxed{1}$

(c) $f\left(\frac{1}{2}\right) = 16^{\frac{1}{2}} = \sqrt{16} = \boxed{4}$

(b) $f\left(\frac{1}{4}\right) = 16^{\frac{1}{4}}$

$= \left(2^4\right)^{\frac{1}{4}}$

$= 2^{4 \cdot \frac{1}{4}}$

$= \boxed{2}$

(d) $f(1) = 16^1 = \boxed{16}$

3. Evaluate the following logarithms:

(a) $\log_2 2 = \boxed{1}$

(c) $\log 10^3 = \boxed{3}$

base 10. common log.

(b) $\ln\left(\frac{1}{e}\right) = \ln\left(e^{-1}\right)$

$= \boxed{-1}$

(d) $6^{\log_6 4} = \boxed{4}$