

## Review session pt 4

### 1 Exponential and logarithmic equations.

Solve the following expressions for  $x$ .

$$\exp[x^4] + 8 = 4, \quad e \ln(x) - 2e = 0$$

### 2 Algebra skills

Write and use the change of base formula to compute the following. Report the numeric value with 6 decimals.

$$\log_8 \left( \frac{1}{8} \right)$$

Use the Laws of Logarithms to expand the following expression.

$$\log_2 \left[ \frac{a^6 b^7}{c^{10}} \right]$$

Use the properties to condense the following expression.

$$\log \left[ \frac{\ln(x^a)}{a \ln(x)} \right] - \log [b \ln(x)]$$

### 3 Exponential and logarithmic functions

Determine the horizontal asymptote for the following function.

$$f(x) = 4(e^{-x} + 4)^2$$

Find the critical points of the following functions,

$$f(x) = \exp[e \ln(x) - 2e], \quad g(x) = \ln [\exp[x^2] + 8]$$