Assignment 1

Financial Mathematics
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(Solution)

1. Evaluate:

   (a) $\log_2 32 = 5 \leftrightarrow 2^5 = 32$

   (b) $\log_4 10$ Not evaluated $(4^x = 10)$

   (c) $\log_3 \left(\frac{1}{9}\right) = -2 \leftrightarrow 3^{-2} = 1/9$

   (d) $\log_{\frac{1}{4}} 16 = -2 \leftrightarrow \left(\frac{1}{4}\right)^{-2} = 16$

   (e) $\ln e^{3x} = 3x \ln e = 3x$

   (f) $\log_8 1 = 0 \leftrightarrow 8^0 = 1$

2. Solve:

   (a) $\sqrt{7x+5} = 3$
   $\leftrightarrow 7x + 5 = 9$
   $\leftrightarrow x = 4/7$

   (b) $5\sqrt{x} = \sqrt{x} + 16$
   $\leftrightarrow 4\sqrt{x} = 16$
   $\leftrightarrow \sqrt{x} = 4$
   $\leftrightarrow x = 16$

   (c) $\log_x 8 = -3$
   $\leftrightarrow x^{-3} = 8$
   $\leftrightarrow x = 1/2$

   (d) $\log_4 x^3 = \frac{3}{2}$
   $\leftrightarrow 3 \log_4 x = \frac{3}{2}$
   $\leftrightarrow \log_4 x = \frac{1}{2}$
   $\leftrightarrow 4^{1/2} = x$
   $\leftrightarrow x = 2$