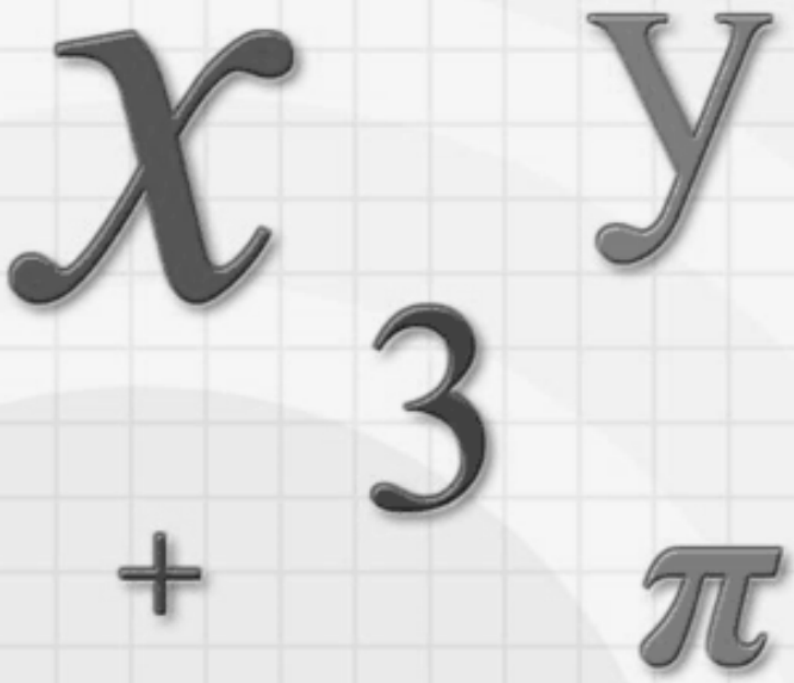

3.4 Solving Exponential & Logarithmic Functions

Exponential Functions

1. $e^{-x^2} = e^{-3x-4}$

$-x^2 = -3x - 4$

$0 = x^2 - 3x - 4$

$(x-4)(x+1)$

$x = 4, -1$

2. $\frac{3(2^x)}{3} = \frac{42}{3}$

$2^x = 14$

$\log_2 14 = x$

$x = 3.807$

3. $2(3^{2t-5}) - 4 = 11$

$2(3^{2t-5}) = 15$

$3^{2t-5} = 7.5$

$\log_3 7.5 = 2t - 5$

$t = 3.417$

LogarithmicFunctions

1.) $\ln x = 2$

$e^2 = x$

$x \approx 7.389$

2.) $\log_3 (5x - 1) = \log_3 (x + 7)$

$5x - 1 = x + 7$

$4x = 8$

$x = 2$

Log Functions (cont.)

3.) $\log_6 (3x + 14) - \log_6(5) = \log_6(2x)$

$\log_6 \frac{3x+14}{5} = \log_6(2x)$

$\frac{3x+14}{5} = 2x$

$3x + 14 = 10x$

$14 = 7x$

$2 = x$

Log Functions (cont.)

4.) $5 + 2 \ln(x) = 4$

$-5 \quad -5$

$2 \cdot \ln(x) = -1$

$\ln(x) = -\frac{1}{2}$

$e^{-\frac{1}{2}} = x$

$x = .607$

5.) $2 \log_5(3x) = 4$

$\log_5(3x) = 2$

$5^2 = 3x$

$25 = 3x$

$x = 8.333$

Practice Problems

- Pg 253 # 10 – 20 even