

# Precalculus Warm-Ups

## Section 3.5

1) Solve the equation:  $80e^{0.045x} = 240$

$$e^{0.045x} = 3$$

$$\ln 3 = .045x$$

$$x \approx 24.414$$

2) Solve the equation:  $3\ln(x-3) + 4 = 5$

$$3\ln(x-3) = 1$$

$$\ln(x-3) = \frac{1}{3}$$

$$e^{\frac{1}{3}} = x - 3$$

$$x = e^{\frac{1}{3}} + 3 \approx 4.3916$$

3) Solve the equation:  $\frac{500}{1+25e^{0.3x}} = 200$

$$200 + 500e^{0.3x} = 500$$

$$500e^{0.3x} = 300$$

$$e^{0.3x} = .06$$

$$\ln .06 = .3x$$

$$x \approx -9.378$$

4) Solve the equation:  $\ln(x+3) + \ln(x-4) = 3\ln 2$

$$\ln(x+3)(x-4) = \ln 2^3$$

$$\ln(x^2 - x - 12) = \ln 8$$

$$x^2 - x - 12 = 8$$

$$x^2 - x - 20 = 0$$

$$(x+4)(x-5) = 0$$

$$x = -4, \sqrt{5}$$

extraneous