

Pre-Calculus

3.4 review worksheet

Name

Key

1. $8^{x+4} = 32^{3x}$

$$(2^3)^{x+4} = (2^5)^{3x}$$

$$3x+12 = 15x$$

$$x=1$$

5. $\ln x + \ln(x+2) = \ln 63$

$$\ln x(x+2) = \ln 63$$

$$x^2 + 2x - 63 = 0$$

$$(x+9)(x-7) = 0$$

$$x = -9$$

2. $8^x - 1 = 3.4$

$$+1 \rightarrow 1$$

$$\ln 8^x = \ln 4.4$$

$$\frac{x \ln 8}{\ln 8} = \frac{\ln 4.4}{\ln 8}$$

$$x = .713$$

6. $6^x = 28$

$$\frac{x \ln 6}{\ln 6} = \frac{\ln 28}{\ln 6}$$

$$x = 1.146$$

3. $11^{x+1} = 7^{x-1}$

$$(x+1) \ln 11 = (x-1) \ln 7$$

$$x \ln 11 + \ln 11 = x \ln 7 - \ln 7$$

$$\frac{x(\ln 11 - \ln 7)}{(\ln 11 - \ln 7)} = \frac{-\ln 7 - \ln 11}{(\ln 11 - \ln 7)}$$

$$x = -9.611$$

7. $12^{3x+11} = 144^{2x+7}$

$$12^{3x+11} = (12^2)^{2x+7}$$

$$3x+11 = 4x+14$$

$$-3 = x$$

4. $\log(3x+2) = 1 + \log 2x$

$$\log \frac{3x+2}{2x} = 1$$

$$\frac{3x+2}{2x} = 10^1$$

$$3x+2 = 20x$$

$$x = \frac{2}{17}$$

8. $-8 \log b = -64$

$$\log b = 8$$

$$b = 10^8$$