

## SAT

Tickets for a show cost \$3.00 or \$5.00. If 50 tickets were sold for a total of \$230, how many tickets were sold for \$3.00?

- (A) 10
- (B) 20
- (C) 25
- (D) 30
- (E) 40

$$\begin{array}{r} 3x + 5y = 230 \\ -3x + 3y = 150 \\ \hline 2y = 80 \\ y = 40 \end{array}$$

5.5a Solving Exponential Equations

$$3^x = 10$$

$$\log 3^x = \log 10$$

$$x \frac{\log 3}{\log 3} = \frac{\log 10}{\log 3}$$

$$x = \frac{\log 10}{\log 3}$$

$$x \approx 2.10$$

$$\frac{50e^{0.035x}}{50} = \frac{200}{50}$$

$$e^{0.035x} = 4$$

$$\ln e^{0.035x} = \ln 4$$

$$0.035x \ln e = \ln 4$$

$$0.035x = \ln 4$$

$$x = \frac{\ln 4}{0.035} \approx 39.6$$

$$\cancel{12} - 5^{2x} = \cancel{8}$$

$$-5^{2x} = -4$$

$$5^{2x} = 4$$

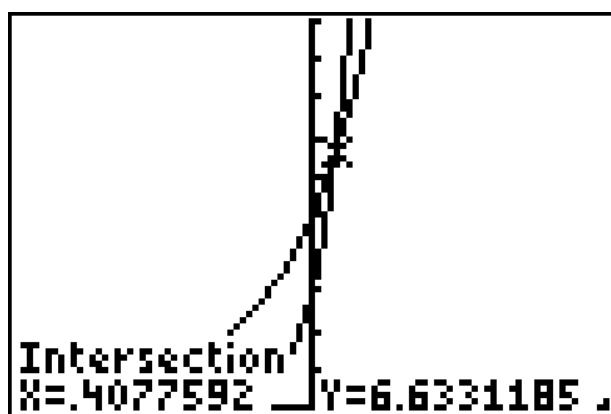
$$\log 5^{2x} = \log 4$$

$$\frac{\cancel{2x} \log 5}{\cancel{2} \log 5} = \frac{\log 4}{\cancel{2} \log 5}$$

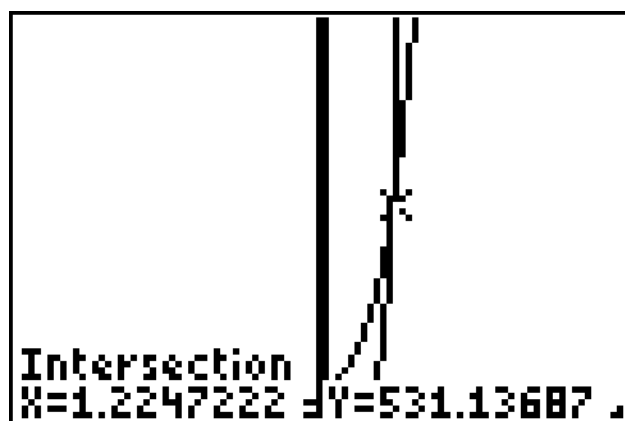
$$x \approx 0.431$$

Now try #1, 4, and 7 on your worksheet.

Plot1	Plot2	Plot3
Y1	$5 \cdot 2^X$	
Y2	$3 \cdot 7^X$	
Y3	=	
Y4	=	
Y5	=	
Y6	=	
Y7	=	



Plot1	Plot2	Plot3
Y1	$5^{(4X-1)}$	
Y2	$7^{(X+2)}$	
Y3	=	
Y4	=	
Y5	=	
Y6	=	
Y7	=	



Solving Logarithmic Equations

$$\log_4(x-5) = -1$$

$$4^{-1} = x-5$$

$$\frac{1}{4} = x - \cancel{5}$$

$$\frac{1}{4} + 5 = x$$

$$\log_{10} x^2 = 2$$

$$10^2 = x^2$$

$$x = 10$$

$$3 \ln(x-3) + \cancel{4} = \cancel{4} + 5$$

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

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

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

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

$$x \approx 4.40$$

Now try # 14, 15, and 23 on your worksheet.