

# HW52

1.  $3^x = \frac{1}{81}$   
 $3^x = 3^{-4}$   
 $x = -4$
2.  $x^{1/4} = 12^{1/4}$   
 $x = 12$
3.  $4^x = 32$   
 $2^{2x} = 2^5$   
 $2x = 5$   
 $x = 5/2$
4.  $10^1 = x$   
 $x = 10$
5.  $(x^3)^{1/3} = (125)^{1/3}$   
 $x = \sqrt[3]{125}$   
 $x = 5$
6.  $20^x = 1$   
 $x = 0$
7.  $\frac{2}{5}^x = \frac{25}{4}$   
 $(\frac{2}{5})^x = (\frac{2}{5})^{-2}$   
 $x = -2$
8.  $x^{-5/3} = \frac{1024}{243}$   
 $x = (\frac{1024}{243})^{-3/5}$   
 $x = (\frac{243}{1024})^{3/5}$
9.  $\log_3 81 = x$   
 $3^x = 81$   
 $3^x = 3^4$   
 $x = 4$
10.  $\log_5 \sqrt{5} = x$   
 $5^x = 5^{1/2}$   
 $x = 1/2$
11.  $\log_3 1/3 = x$   
 $3^x = 1/3$   
 $3^x = 3^{-1}$   
 $x = -1$
12.  $\log_2 1/32 = x$   
 $2^x = 1/32$   
 $2^x = 2^{-5}$   
 $x = -5$
13.  $\log_8 4 = x$   
 $8^x = 4$   
 $2^{3x} = 2^2$   
 $3x = 2$   
 $x = 2/3$
14.  $\log 1,000,000,000$   
 $10^x = 1,000,000,000$   
 $x = 9$
15.  $\log_{1/2} 1/32 = x$   
 $\frac{1}{2}^x = \frac{1}{32}$   
 $2^{-x} = 2^{-5}$   
 $-x = -5$   
 $x = 5$
16.  $\log_{9/4} 2/3 = x$   
 $9/4^x = 2/3$   
 $(2/3)^{-2x} = 2/3$   
 $-2x = 1$   
 $x = -1/2$
17.  $\frac{\log 120}{\log 5} \approx 2.975$
18.  $\frac{\log 0.9}{\log 3} \approx -0.096$
19.  $\log_4 99 = x$   
 $\frac{\log 99}{\log 4} \approx 3.315$
20.  $\log_6 729 = x$   
 $\frac{\log 729}{\log 6} \approx 3.679$
21.  $\log_7 4.88 = x$   
 $\frac{\log 4.88}{\log 7} \approx 0.815$
22.  $\log_{12} 5.75 = x$   
 $\frac{\log 5.75}{\log 12} \approx 0.704$
23.  $\frac{\log 7}{\log 28} = x \approx 1.89$
24.  $(0.95)^x = 1/4$   
 $\log .95^{1/4} = x$   
 $\frac{\log 1/4}{\log .95} = 27.03$

P290 #1-3,5

1. a)  $10^x = 1000$

$x = 3$

b)  $5^x = 625$

$x = 4$

c)  $7^{1/2} = x$

$x = \sqrt{7}$

d)  $x^3 = 8$

$x = 2$

e)  $5^{-2} = x$

$x = 1/25$

f)  $6^x = 1$

$x = 0$

2. already completed

3. a)  $\log .001 = x$

$x = -3$

b)  $\log_5 100 = x$

$x \approx \frac{\log 100}{\log 5}$

$x \approx 2.8614$

c)  $\log_{35} 8 = x$

$x = \frac{\log 8}{\log 35}$

$x \approx 0.5849$

d)  $\log_{0.4} 5 = x$

$x = \frac{\log 5}{\log 0.4}$

$x \approx -1.7565$

3. e)  $\log_{0.8} 0.03 = x$

$x = \frac{\log 0.03}{\log 0.8}$

$x \approx 15.7144$

f)  $\log_{17} 0.5 = x$

$x = \frac{\log 0.5}{\log 17}$

$x \approx -0.2447$

5. a) F  $\log_6 12 = x$

b) F  $2^x = 5$

c) F  $\frac{\log 1/2}{\log 3}$

d) F  $x = \log_3 7$