

Book Review

$$8. Y = .2(3.8)^x$$

$r = 3.8 \rightarrow$ growth

$$y = .2 \quad \text{or } (0, .2)$$

$$9. Y = 3(.25)^x$$

$r = .25 \rightarrow$ decay

~~Y = 3~~
 $y = 3$
or $(0, 3)$

~~14. $P_0 = 12,500$~~

~~$r = .09$~~

~~$12,500(1-.09)^t$~~

~~$12,500(.91)^t$~~

~~$12,500(.91)^5$~~

~~$= \$7,800.40$~~

15. $P_0 = 50$

$r = .03$

$50(1+.03)^t$

$50(1.03)^5$

$\$57.96$

$$16. Y = 5(2)^{x+1} + 3$$

parent $y = 2^x$

$a = 5$ stretch of 5

$x+1 =$ left 1

$k+3 =$ up 3

18. use $P_0 e^{rt}$

"continuously compounded"

$$1000 e^{(.048 \times 2)}$$

$$= \$1100.70$$

19. $250 e^{(.062 \times 2.5)}$

$$= \$291.91$$

20. $e^{-3} = .0498$

23. $e^{-1/2} = .0665$

24. $U^2 = 36$

$$\log_6 36 = 2$$

25. $2^{-3} = .125$

$$\log_2 .125 = -3$$

$$28. \log_2 64$$

$$2^x = 64$$

$$\boxed{x = 6}$$

$$29. \log_3 \frac{1}{9}$$

$$3^x = \frac{1}{9}$$

$$\boxed{x = -2}$$

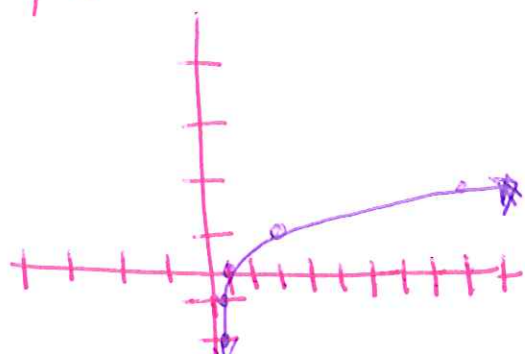
$$32. y = \log_3 x$$

$$3^y = x$$

rewrite

$$y = 3^x \text{ flip}$$

X	y	X	y
-2	1/9	1/9	-2
-1	1/3	1/3	-1
0	1	1	0
1	3	3	1
2	9	9	2



$$40. 4 \log_3 x + \log_3 7$$

$$\text{power} \rightarrow \log_3 x^4 + \log_3 7$$

$$\text{product} \rightarrow \boxed{\log_3 7x^4}$$

$$43. 3 \log_4 x + 2 \log_4 x$$

$$\text{power product} \rightarrow \log_4 x^3 + \log_4 x^2$$

$$\text{product} \rightarrow \boxed{\log_4 x^5}$$

$$44. \log_4 x^2 y^3$$

$$\text{product} \rightarrow \log_4 x^2 + \log_4 y^3$$

$$\boxed{\text{power} \rightarrow 2 \log_4 x + 3 \log_4 y}$$

$$46. \log_3 \frac{2}{x}$$

$$\rightarrow \text{quotient} = \log_3 2 - \log_3 x$$

$$49. \log \frac{z^2}{5}$$

$$\text{quotient} \rightarrow \log z^2 - \log 5$$

$$\boxed{\text{power} \rightarrow 2 \log z - \log 5}$$

Prob. Change of Base

$$\log_2 7 = \frac{\log 7}{\log 2}$$

$$\boxed{\approx 2.81}$$

n2. $25^{2x} = 125$

① Check if same base?

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

② same base cancels.

$$2 \cdot 2x = 3$$

$$4x = 3$$

③ solve for x!

$$\boxed{x = 3/4}$$

Check.

$$25^{(2 \cdot (3/4))} = 125?$$

$$125 = 125 \checkmark$$

Yes!

n4. $7^{x-3} = 25$

① same base?

NO - AKA log.

$$\log 7^{x-3} = \log 25$$

$$(x-3) \log 7 = \log 25$$

$$x-3 = \frac{\log 25}{\log 7}$$

$$x = 1.05 + 3$$

$$\boxed{x = 4.05}$$

n5. $5^{x+3} = 12$

$$5^x = 9$$

$$\log 5^x = \log 9$$

$$x \frac{\log 5}{\log 5} = \frac{\log 9}{\log 5}$$

$$x = \frac{\log 9}{\log 5}$$

$$\boxed{x = 1.37}$$

$$\text{Q6. } \log_3 3x = 1$$

To cancel \log
put opp side
to its base

$$3x = 10^1$$

$$3x = 10$$

$$x = 10/3$$

$$\boxed{x \approx 3.33}$$

$$\text{Q9. } \frac{2 \log_3 x}{2} = \frac{54}{2}$$

$$\log_3 x = 27$$

$$\boxed{x = 3^{27}}$$

$$x = 7.0 \times 10^{12}$$

$$\text{or } 7.0 \text{E}12$$

any
answer is
OK
:)

$$\text{Q7. } 2 \ln x + 3 \ln 2 = 5$$

$$\ln x^2 + \ln 2^3$$

$$\ln 8x^2 = 5$$

* to cancel \ln use
base "e"

$$\frac{8x^2}{8} = \frac{e^5}{8}$$

$$x^2 = \frac{e^5}{8}$$

$$x^2 = 18.75$$

$$x = \pm \sqrt{18.75}$$

* Check
answer
plug in

$$\boxed{x = \pm 4.31}$$

$$\text{Q9. } \frac{4e^{(x-1)}}{4} = \frac{104}{4}$$

$$e^{x-1} = 11$$

* use "ln" to cancel "e"

$$x-1 = \ln 11$$

$$x = \ln 11 + 1$$

$$\boxed{x = 3.77}$$