

15 A  $\log_3 3 = 1$

B  $\log_3 1 = 0$

C  $\log_3 3^2 = 2$

21 A  $2^{\log_2 37} = 37$

B  $3^{\log_3 8} = 8$

C  $4^{\log_4 5} = 5$

25 A  $\log_5 (125) = 5^x = 125 \quad x = 3$

B  $\log_{49} (7) = 49^x = 7 \quad x = 1/2$

C  $\log_9 (\sqrt{3}) = 9^x = 1.732 \quad x = 1/4$

27

log form	Exponential
$\log_8 (8) = 1$	$8^1 = 8$
$\log_8 (64) = 2$	$8^2 = 64$
$\log_8 (4) = 2/3$	$8^{2/3} = 4$
$\log_8 (512) = 3$	$8^3 = 512$
$\log_8 (1/8) = -1$	$8^{-1} = 1/8$
$\log_8 (1/64) = -2$	$8^{-2} = 1/64$

37 A  $\log_2 x = 5 \quad 2^5 = 32$

B  $\log_2 (16) = x \quad 2^x = 16 \quad x = 4$

43 III      44 II      45 IV      46 I



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15. a)  $\log_3 3 = 1$

b)  $\log_3 1 = 0$

c)  $\log_3 3^2 = 2$

21. a)  $2^{\log_2 3^7} = 3^7$

b)  $3^{\log_3 8} = 8$

c)  $4^{\log_4 5} = 5$

25. a)  $\log_5 125 = 3$

b)  $\log_4 4^7 = 7$

c)  $\log_9 \sqrt{3} = 1/4$

22	$\log_8 8 = 1$	$8^1 = 8$
	$\log_8 64 = 2$	$8^2 = 64$
	$\log_8 4 = 2/3$	$8^{2/3} = 4$
	$\log_8 512 = 3$	$8^3 = 512$
	$\log_8 (1/8) = -1$	$8^{-1} = 1/8$
	$\log_8 (1/64) = -2$	$8^{-2} = 1/64$

37. a)  $\log_2 x = 5$        $2^5 = x$        $x = 32$

b)  $\log_2 16 = x$        $2^x = 16$        $x = 4$

43. III

44. II

45. IV

46. I

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10.332

19. a)  $\log_3 3 = 3^3 = \boxed{27}$     b)  $\log_3 1 = 3^1 = \boxed{3}$     c.)  $\log_3 3^2 = \log_3 9 = \frac{0^3}{\boxed{129}}$

21. a)  $2^{\log_2 3^7} = \boxed{3^7}$     b.)  $3^{\log_3 8} = \boxed{8}$     c.)  $4^{\log_4 5} = \boxed{5}$

25.  $\log_9 129 = \boxed{3}$     b.)  $\log_{49} 7 = 49^{1/2} = 7$     c.)  $\log_9 \sqrt{3} = \boxed{0^{1/3}}$

27.

log	exponent
$\log_8 8 = 1$	$8^1 = 8$
$\log_8 64 = 2$	$8^2 = 64$
$\log_8 4 = \frac{2}{3}$	$8^{2/3} = 4$
$\log_8 12 = 3$	$8^3 = 512$
$\log_8 \left(\frac{1}{8}\right) = -1$	$8^{-1} = \frac{1}{8}$
$\log_8 \left(\frac{1}{64}\right) = -2$	$8^{-2} = \frac{1}{64}$

37. a.)  $\log_2 x = 5$   
 $2^5 = x$      $\boxed{x=32}$

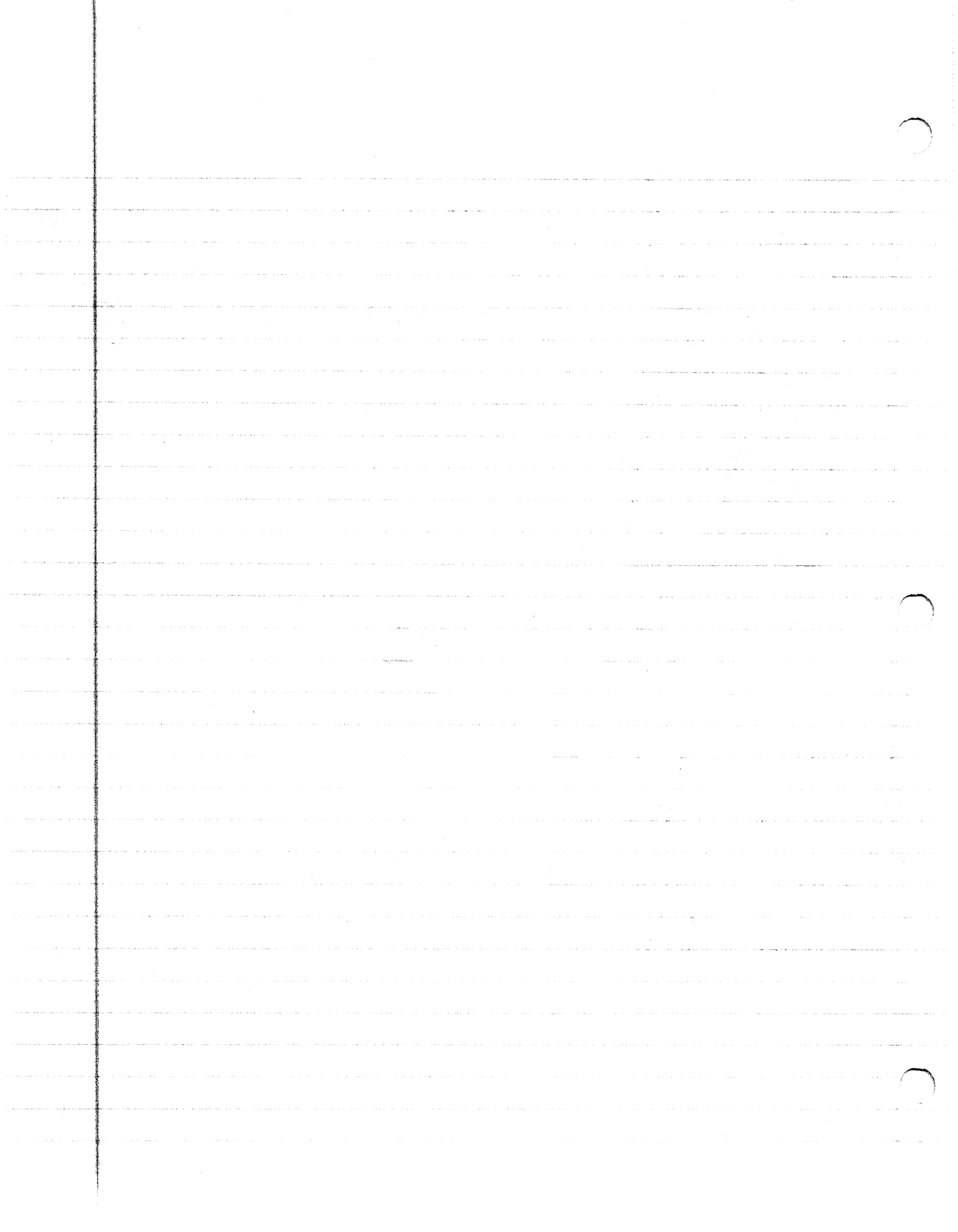
b.)  $\log_2 16 = x$   
 $2^x = 16$   
 $\boxed{x=4}$

43.  $\log_4 x =$  graph III

44.  $-\log_4 x =$  graph II

49.  $\log_4 x =$  graph ~~IV~~

410.  $\log_4 x =$  graph I



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15, 21, 25, 27,  
37, 43-46

15. a)  $\log_3 3 = 1$     b)  $\log_3 1 = 0$     c)  $\log_3 3^2 = 2$

21. a)  $2^{\log_2 37} = 37$     b)  $3^{\log_3 8} = 8$     c)  $4^{\log_4 5} = 5$

25. a)  $\log_5 125 = 3$     b)  $\log_{49} 7 = \frac{1}{2}$     c)  $\log_9 \sqrt{3} = \frac{1}{4}$

27.	$\log_8 8 = 1$	$8^1 = 8$
	$\log_8 64 = 2$	$8^2 = 64$
	$\log_8 \frac{1}{8} = -1$	$8^{-1} = \frac{1}{8}$
	$\log_8 512 = 3$	$8^3 = 512$
	$\log_8 \left(\frac{1}{8}\right) = -1$	$8^{-1} = \frac{1}{8}$
	$\log_8 \frac{1}{64} = -2$	$8^{-2} = \frac{1}{64}$

37. a)  $\log_2 x = 5 \rightarrow x = 32$     b)  $\log_2 16 = x \rightarrow x = 4$

43. IV

44. II

45. III

46. I

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Jerry Lunning, Erika p. 332 # 15, 21, 25, 27, 37, 43-46

15) a)  $3^x = 3$

$x = 1$

b)  $3^x = 1$

$x = 0$

c)  $3^x = 9$

$x = 2$

21) a)  $2^{(x-37)}$

$x = 37$

b)  $3^{\log_3 8}$

$x = 8$

c)  $4^{\log_4 5}$

$x = 5$

25) a)  $5^x = 125$

$x = 3$

b)  $49^x = 7$

$x = \frac{1}{2}$

c)  $9^x = \sqrt{3}$

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

27)  $\log_8 8 = 1$        $8^1 = 8$

$\log_8 64 = 2$        $8^2 = 64$

$\log_8 4 = \frac{2}{3}$        $8^{\frac{2}{3}} = 4$

$\log_8 512 = 3$        $8^3 = 512$

$\log_8 (\frac{1}{2}) = -1$        $8^{-1} = \frac{1}{2}$

$\log_8 (\frac{1}{64}) = -2$        $8^{-2} = \frac{1}{64}$

37) a)  $\log_2 x = 5$

$2^5 = x$

$x = 32$

b)  $\log_2 16 = x$

$2^x = 16$

$x = 4$

43) III

44) II

45) IV

46) I

