Lauren, Gavin, Olivia
Algebra
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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 $\log_5(125) = 5^x = 125 \quad x = 3$
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

Stacy Beller
Sarah Larkins

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15. a) $\log_3 3 = 1$

b) $\log_3 1 = 0$ 1

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) $\log_{49} 7 = 1/2$

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

22.

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

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

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

43. III 45. IV

44. II 46. I

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15. a) $\log_3 3 = 3^3 = \boxed{27}$ b) $\log_3 1 = 3^1 = \boxed{3}$ c.) $\log_3 3^2 = \log_3 9 = 9^3 = \boxed{729}$

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

25. $\log_5 125 = \boxed{3}$ b.) $\log_{49} 7 = 49^{1/2} = 7$ c.) $\log_9 \sqrt{3} = \boxed{9^{N3}}$

27.

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

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

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

43. $\log_4 x$ = graph III

44. $-\log_4 x$ = graph II

45. $\log_{\frac{1}{4}} x$ = graph IV

46. $5 \log_4 x$ = 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.

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

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

43. IV
44. II
45. III
46. I

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(15) a) $3^x = 3$

$x = 1$

b) $3^x = 1$

$x = 0$

c) $3^x = 9$

$x = 2$

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

$x = 37$

b) $3^{\log_3 8}$

$x = 8$

c) $4^{\log_4 5}$

$x = 5$

(25) a) $5^x = 125$

$x = 3$

b) $49^x = 7$

$x = 1/2$

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

$x = 1/4$

(27)

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

(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