Today's Plan:

Learning Target (standard): I will prepare for the final exam.

Students will: Complete practice problems over previous concepts at the boards, put up homework problems on the board and make necessary corrections to their own work, and complete practice problems over past concepts.

Teacher will: Provide practice problems over previous concepts, check homework problems for accuracy and provide students feedback, describe and provide examples of past concepts and assign students assessment problems over new concepts.

Assessment: Board work, homework check and homework assignment

Differentiation: Students will work at the board, go over and correct homework at their seats, actively engage in practice/review problems.

Solve using elimination.

$$-4x + 3y + z = 26$$
$$4x + 6y + 4z = 20$$
$$-4x + 2y + 5z = 30$$

$$\gt +$$
$$\gt +$$

$$8\left(9y + 5z = 46\right)$$
$$-9\left(8y + 9z = 50\right)$$

$$72y + 40z = 368$$
$$-72y - 81z = -450$$
$$\overline{\qquad\qquad\qquad\qquad}$$
$$-41z = -82$$
$$z = 2$$

$$8y + 18 = 50$$
$$8y = 32$$
$$y = 4$$

$$-4x + 8 + 10 = 30$$
$$-4x + 18 = 30$$
$$-4x = 12$$
$$x = -3$$

independent

$$(-3, 4, 2)$$

1) $\log_a(xy) = \log_a x + \log_a y$

2) $\log_a\left(\dfrac{x}{y}\right) = \log_a x - \log_a y$

3) $\log_a x^m = m\log_a x$

$$y = \log_a x$$
$$a^y = x$$

Sketch the graph of the function. Be sure to state the asymptote, domain & range.

$\boxed{y = \log_a x \\ a^y = x}$

37) $f(x) = 2 \cdot 3^x - 1$
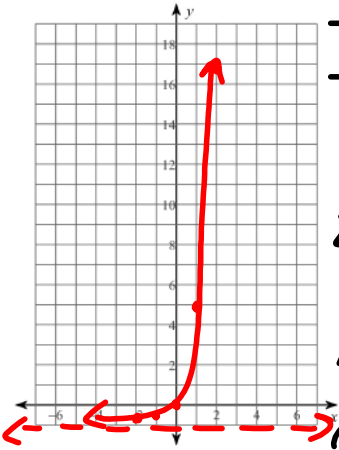
X	Y
-2	-.778
-1	-.333
0	0
1	5
2	17

HA: $y = -1$
D: $\mathbb{R}$
R: $\{y \mid y > -1\}$

38) $f(x) = \log_6(x-1) + 4$
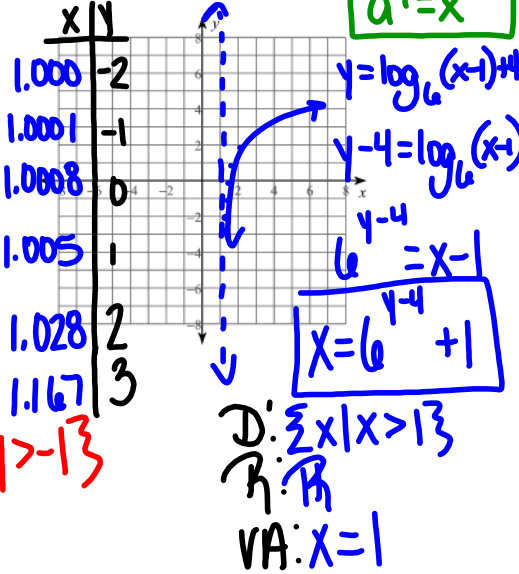
X	Y
1.000	-2
1.0001	-1
1.0008	0
1.005	1
1.028	2
1.167	3

$y = \log_6(x-1)+4$
$y - 4 = \log_6(x-1)$
$6^{y-4} = x-1$
$\boxed{x = 6^{y-4} + 1}$

D: $\{x \mid x > 1\}$
R: $\mathbb{R}$
VA: $x = 1$

Expand each logarithm.

39) $\ln(a^5 \cdot b)^4$

$= \ln(a^{20}b^4)$
$= \ln a^{20} + \ln b^4$
$= 20\ln a + 4\ln b$

40) $\log_5\left(\dfrac{x^4}{?}\right)^5$

$= \log_5\left(\dfrac{x^{20}}{y^5}\right)$
$= \log_5 x^{20} - \log_5 y^5$
$= 20\log_5 x - 5\log_5 y$

Condense each expression to a single logarithm.

41) $\log_6 z + \dfrac{\log_6 x}{3} + \dfrac{\log_6 y}{3}$

$= \log_6 z + \frac{1}{3}\log_6 x + \frac{1}{3}\log_6 y$
$= \log_6 z + \log_6 x^{\frac{1}{3}} + \log_6 y^{\frac{1}{3}}$
$= \log_6\left(z x^{\frac{1}{3}} y^{\frac{1}{3}}\right)$
$= \log_6\left(z\sqrt[3]{xy}\right)$

42) $\log_8 c + \dfrac{\log_8 a}{2} + \dfrac{\log_8 b}{2}$

$= \log_8 c + \frac{1}{2}\log_8 a + \frac{1}{2}\log_8 b$
$= \log_8 c + \log_8 a^{\frac{1}{2}} + \log_8 b^{\frac{1}{2}}$
$= \log_8\left(c a^{\frac{1}{2}} b^{\frac{1}{2}}\right) = \log_8\left(c\sqrt{ab}\right)$

Solve each equation.

43) $\log_4 4x - \log_4 2 = 4$

$\log_4\left(\frac{4x}{2}\right) = 4$
$\log_4(2x) = 4$
$4^4 = 2x$
$256 = 2x$
$\boxed{x = 128}$

44) $\log_8 6 + \log_8(x+6) = 2$

$\log_8 6(x+6) = 2$
$8^2 = 6x + 36$
$64 = 6x + 36$
$6x = 28$
$\boxed{x = \dfrac{14}{3}}$

45) $16 \cdot 64^{-3n} = 64^{3n-1}$

$(4^2)\cdot(4^3)^{-3n} = (4^3)^{3n-1}$
$4^2 \, 4^{-9n} = 4^{9n-3}$
$4^{-9n+2} = 4^{9n-3}$
$-9n + 2 = 9n - 3$
$-18n = -5$
$\boxed{n = \dfrac{5}{18}}$

46) $-2 \cdot 7^{n+8} = -35$