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(22) $\log_2(xy)^{10}$

$10\log_2 x + 10\log_2 y$
or $10(\log_2 x + \log_2 y)$

(24) $2\log_a x - (\log_a y + 3\log_a z)$

or $2\log_a x - \log_a y - 3\log_a z$

(26) $\frac{1}{3}\ln 3 + \frac{2}{3}\ln r + \frac{1}{3}\ln s$

or $\frac{1}{3}(\ln 3 + 2\ln r + \ln s)$

(30) $\frac{1}{2}\log_5(x-1) - \frac{1}{2}\log_5(x+1)$

or $\frac{1}{2}(\log_5(x-1) - \log_5(x+1))$

(42) ~~$\log_5((x^2-1)(x-1))$~~ $\log_5 \frac{x^2-1}{x-1}$
 ~~$\log_5(x^3-x^2+x+1)$~~ $\log_5 \frac{(x+1)(x-1)}{x-1}$

(44) $\ln \frac{(a+b)(a-b)}{c^2} = \ln \left(\frac{a^2-b^2}{c^2} \right)$

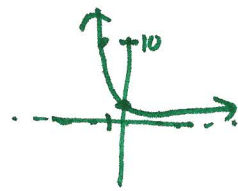
(46) $\log_5 \left(\frac{xy^2}{z^3} \right)^2$

or $\log_5 \left(\frac{x^2 y^4}{z^6} \right)$

(48) $\log_a \frac{bd^e}{s^r}$

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(26) 10^{-x} reflection over y-axis
(0,1) (-1,10) y=0



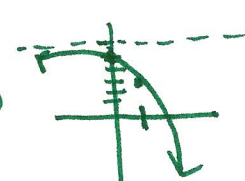
(28) 2^{x-3} HS → 3

(1,2) (4,2) y=0
(3,1)



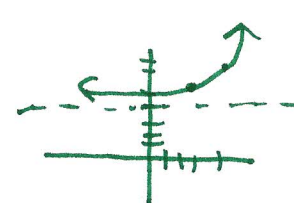
(30) 6^{-3^x} vs ↑ 6 reflect over x-axis

(0,5) (1,3) y=6



(38) $e^{x-3} + 4$ HS → 3 vs ↑ 4

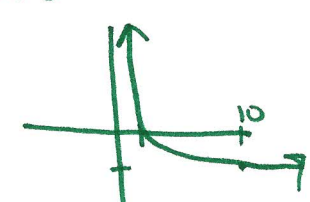
(3,5) (4,6.27) y=4



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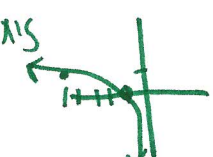
(50) $-\log_{10} x$ reflection over x-axis

(1,0) (10,-1) x=0



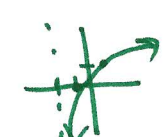
(51) $\log_5(-x)$ reflect over y-axis

(-1,0) (5,1) x=0



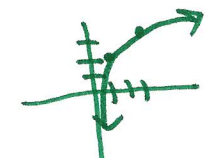
(52) $\ln(x+2)$ HS ← -2

(-1,0) (.71,1) x=-2



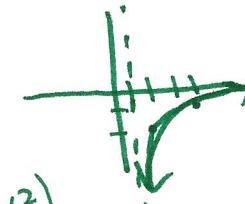
(53) $2 + \log_3 x$ vs ↑ 2

(1,2) (3,3) x=0



(54) $y = \log_3(x-1) - 2$ HS → 1

x=1 (2,-2) (4,-1) vs ↓ 2



(60) $\log_5(8-2x)$

$8-2x > 0$
 $-2x > -8$
 $x < 4$

$(-\infty, 4)$

(62) $\ln(x-x^2)$

$x-x^2 > 0$
 $x(1-x) > 0$

$(0,1)$



