

Name key

Date _____

For #15-16 - Use the properties of logarithms to rewrite the expressions in terms using $\log_3 4 \approx 1.262$ and $\log_3 7 \approx 1.771$

<p>15. $\log_3 16$</p> <p>$2(\log_3 4)$ = 2.524</p>	<p>16. $\log_3 \frac{4}{7}$</p> <p>$\log_3 4 - \log_3 7$</p> <p>$-.509$</p>
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Solve:

<p>17. $2^{x+1} + 11 = 43$</p> <p>$2^{x+1} = 32$</p> <p>$2^{x+1} = 2^5$</p> <p>$x = 4$</p>	<p>18. $5^{x-2} = \frac{1}{625}$</p> <p>$5^{x-2} = 5^{-4}$</p> <p>$x = -2$</p>
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<p>19. $-3(2^x) = -336$</p> <p>$\log_2 2^x = \log_2 112$</p> <p>$x = 6.807$</p>	<p>20. $\log_5(6x+1) = \log_5(3x+16)$</p> <p>$6x+1 = 3x+16$</p> <p>$x = 5$</p>
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<p>21. $-3e^{4x} - 7 = -40$</p> <p>$-3e^{4x} = -33$</p> <p>$\ln e^{4x} = \ln 11$</p> <p>$x = .599$</p>	<p>22. $12 - 3\ln(2x) = 6$</p> <p>$-3\ln(2x) = -6$</p> <p>$e^{-\ln(2x)} = e^2$</p> <p>$x = 3.695$</p>
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<p>23. $4\log_3(x-3) - 21 = -9$</p> <p>$\log_3(x-3) = 3$</p> <p>$x = 30$</p>	<p>24. $\log_6 x + \log_6(x+5) = 2$</p> <p>$\log_6 x(x+5) = 2$</p> <p>$x^2 + 5x - 36 = 0$</p> <p>$x = -9$, 4</p>
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<p>25. $e^{2x} - 5e^x - 6 = 0$</p> <p>$(e^x - 6)(e^x + 1) = 0$</p> <p>$e^x - 6 = 0$ } $e^x + 1 = 0$</p> <p>$\ln e^x = \ln 6$ } $\ln e^x = \ln -1$</p> <p>$x = 1.792$ Not Possible</p>	<p>26. $\ln(x+5) = \ln(x-1) - \ln(x+1)$</p> <p>$\ln(x+5) = \ln \frac{x-1}{x+1}$</p> <p>$x+5 = \frac{x-1}{x+1}$</p> <p>$x^2 + 6x + 5 = x - 1$</p> <p>$x^2 + 5x + 6 = 0$</p> <p>$x = -3, -2$</p> <p>No Solution</p>
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