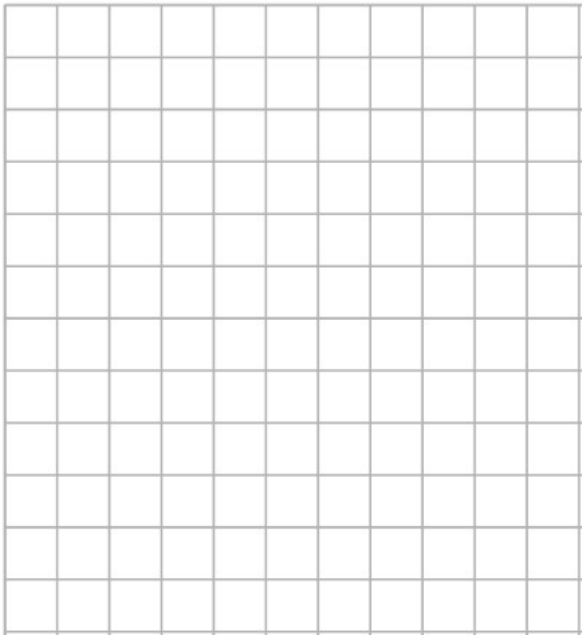
Ch.4 Exponential Functions Name: _____ Per:____

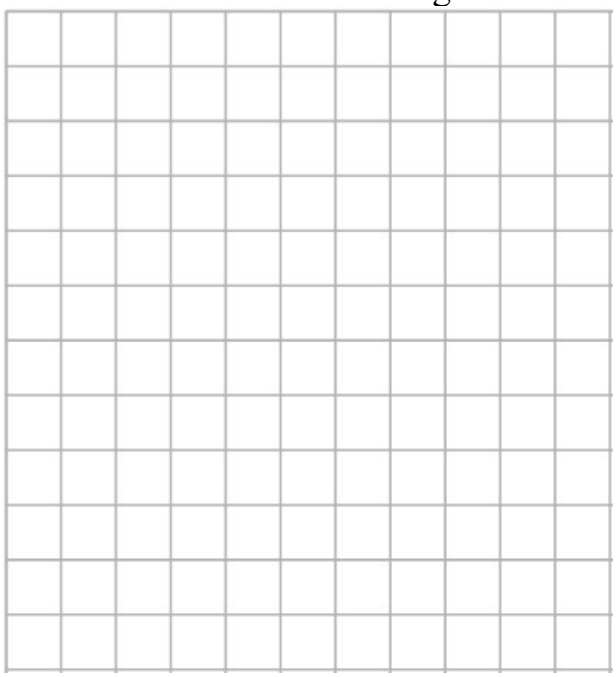
Use a graphing calculator to complete #1-7. Check that the *mode* is set to *Func* graphing and set your window so that $-6 \le x \le 6$ and $-5 \le y \le 5$ with a scale of 1. **Write the equation next to each graph, then label the coordinates of the x- and y-intercepts.**

1. Graph the following equations on the same set of axes.

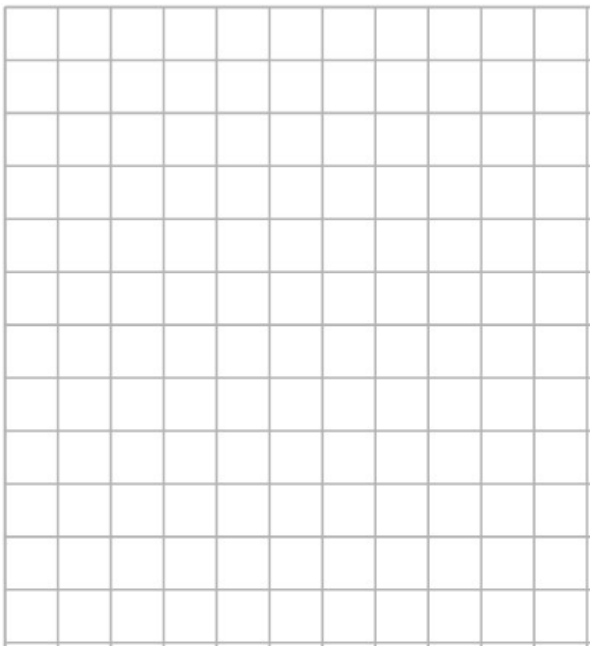
$y = 4^x$ $y = 4^x + 2$ $y = 4^x - 3$



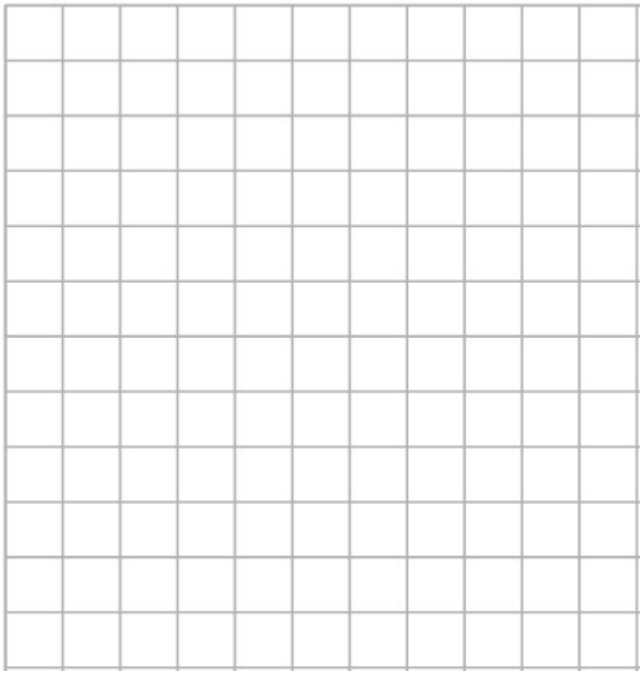
2. Sketch a graph of $y > -4^x$. Don't forget a dashed/solid line and shading.



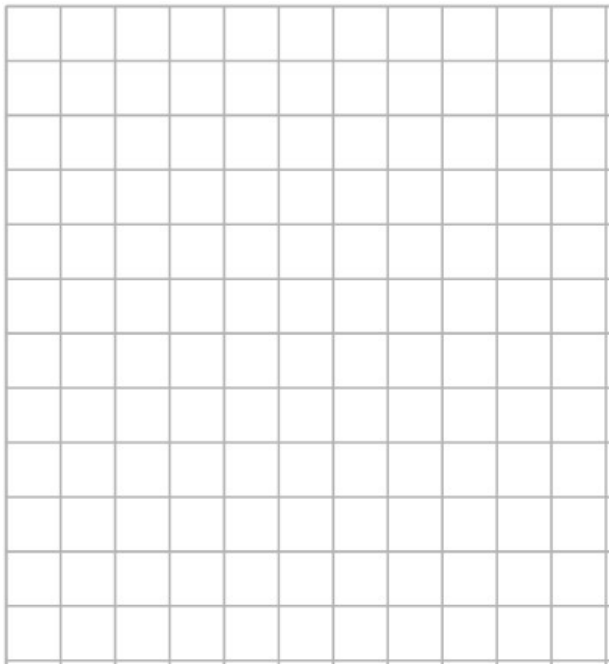
3. Sketch a graph of $y \le 4^{-x}$. Don't forget a dashed/solid line and shading.



4. Graph the following equations on the same set of axes: $y = 3^x$ $y = \left(\frac{1}{3}\right)^x$ $y = -\left(\frac{1}{3}\right)^x$

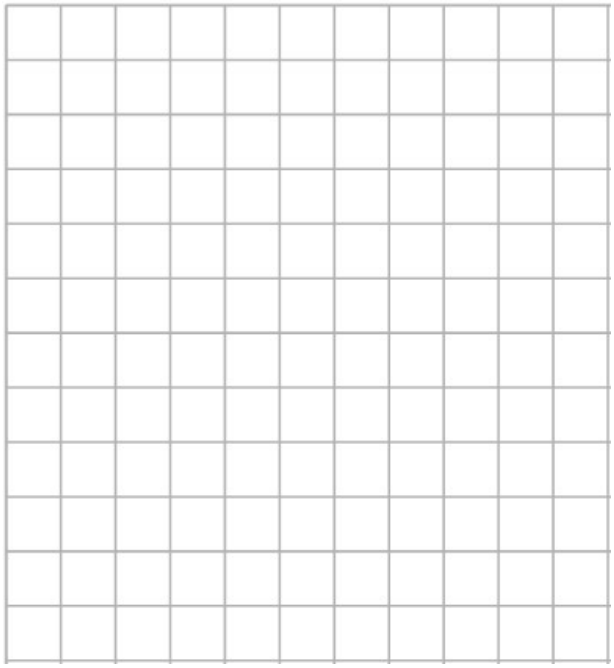


5. Graph the following equations on the same set of axes. $y = 12^x$ $y = 5^x$ $y = 2^x$



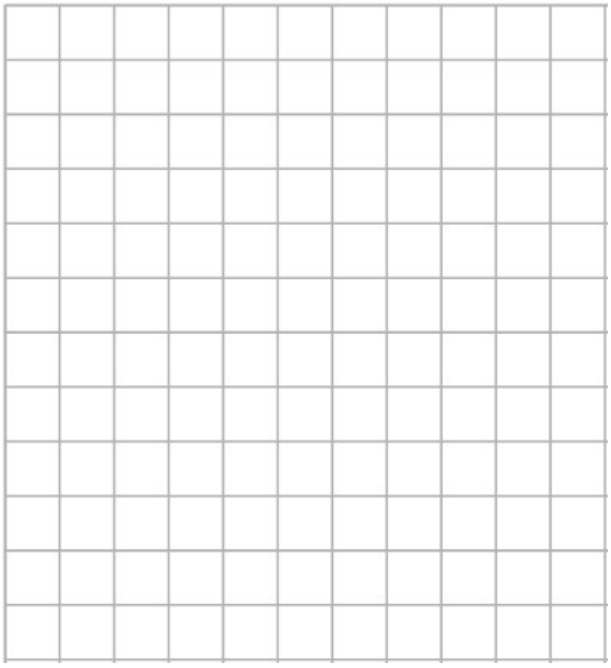
6. Graph the following equations on the same set of axes. $y = 10^x$ $y = \log x$

Note: logx = common log of x (base = 10)



7. Graph the following equations on the same set of axes. $y = e^x$ $y = \ln x$

Note: ln$x$ = natural log of x (base = e)



Simplify the following WITHOUT A CALCULATOR. Clearly show all steps on the back of this paper.

8. $\dfrac{2^4}{2^{-1}}$ 9. $\left(3^{-1}+3^{-2}\right)^{-1}$ 10. $729^{\frac{1}{3}}$

11. $\dfrac{27}{27^{\frac{2}{3}}}$ 12. $2^{\frac{1}{2}} \cdot 12^{\frac{1}{2}}$ 13. $16^{-\frac{1}{4}}$

14. $81^{\frac{1}{2}} - 81^{-\frac{1}{2}}$ 15. $(3x^2)^3$

16. $\left(64x^6\right)^{\frac{1}{3}}$ 17. $(4x^4)^{\frac{3}{2}}$

HINT: rewrite #18-19 using like bases, then solve

18. solve for x: $27^{x+5} = 243^{2x-4}$

19. solve for x: $32^{x^2+4x} = 16^{x^2+4x+3}$

Check answers for #8-19:

-6 2 3 5 9 $2\sqrt{6}$ $4x^2$ $8x^6$ $27x^6$ 32 $\frac{1}{2}$ $\frac{9}{4}$ $8\frac{8}{9}$