Section 3.2 Worksheet Precalculus Name_____

Period_____

**Simplify:**

1. $\log_2 2^7 =$ $1^7 = \boxed{1}$

2. $3^{\log_3 8} =$ $\boxed{8}$ $\log_3 x = \log_3 8$

3. $\ln e^x =$ $\boxed{x}$

4. $5\ln e =$ $\boxed{5}$

5. $\ln 1 =$ $\boxed{0}$ $e^0 = 1$

6. $e^{\ln 5} =$ $\boxed{5}$ $\ln x = \ln 5$

7. $\ln\left(\frac{1}{e^2}\right) =$ $\ln e^{-2}$ $\boxed{-2}$ $e^x = e^{-2}$

8. $\log 1 =$ $\boxed{0}$ $10^0 = 1$

9. $-2\ln e =$ $-2 \cdot 1$ $\boxed{-2}$

10. $\log 10 =$ $10^1 = 10$ $\boxed{1}$

11. $\log_4 4^5 =$ $4^x = 4^5$ $\boxed{5}$

12. $10^{\log 7} =$ $\boxed{7}$ $\log x = \log 7$

**Solve:**

13. $\log_6 6 = 3x - 1$

$1 = 3x - 1$

$2 = 3x$

$\boxed{x = \frac{2}{3}}$

14. $7^{\log_7 8} = 2^x$

$8 = 2^x$

$\boxed{x = 3}$

15. $\ln(4x - 6) = \ln 3x$

$4x - 6 = 3x$

$x = 6$

16. $\log_2 3x = \log_2\left(\frac{1}{2}\right)$

$3x = \frac{1}{2}$

$\boxed{x = \frac{1}{6}}$

17. $\log_8 16 = x$

$8^x = 16$

$2^{3x} = 2^4$

$3x = 4$

$\boxed{x = 4/3}$

18. $\log 2x = \log 6$

$2x = 6$

$\boxed{x = 3}$

19. Find the inverse of $y = 2^x$.

$x = 2^y$ $\log_2 x = y$ $f^{-1}(x) = \log_2 x$

20. Use $f(x) = \log_2(x+4)$ to find the following without using a calculator, then sketch the graph.

domain: $(-4, \infty)$

range: $(-\infty, \infty)$

equation of the asymptote: $x = -4$

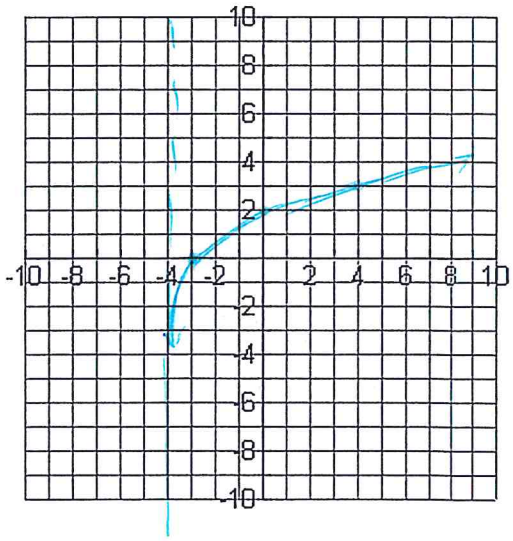
x-intercept $(-3, 0)$ $\log_2(x+4) = 0$

$2^0 = x + 4$

$1 = x + 4$

$x = -3$

y-intercept $(0, 2)$ $\log_2(0+4)$




Find the coordinates of the point when x = 4.

$(4, 3)$ $\log_2(4+4)$

Section 3.2 Worksheet
Review #2

Precalculus

Name_____
Period_____

**Simplify:**

1. $\log_4 4^5 =$ $x$
   $4^x = 4^5$ $\boxed{x=5}$

2. $2^{\log_2 6} =$ $\log_2 x = \log_2 6$
   $\cancel{2^x = \log_2 6}$ $\boxed{6}$

3. $\ln e^a =$ $\log_e e^a = \boxed{a}$

4. $2\ln e =$ $\boxed{2}$

5. $\ln 1 =$ $\boxed{0}$

6. $e^{\ln 2} =$ $x$ $\ln x = \ln 2 =$ $\boxed{2}$

7. $\ln\left(\frac{1}{e^3}\right) =$ $\ln e^{-3}$ $\boxed{-3}$
   $e^x = e^{-3}$

8. $\log 100 =$ $\boxed{2}$
   $10^2 = 100$

9. $-4\ln e =$
   $-4 \cdot 1 =$ $\boxed{-4}$

10. $\log 1 =$ $\boxed{0}$
    $10^0 = 1$

11. $\log_2 2^3 =$ $\boxed{3}$
    $2^x = 2^3$

12. $10^{\log 5} =$ $\boxed{5}$
    $\log x = \log 5$

**Solve:**

13. $\log_4 1 = 2x - 1$
    $4^{2x-1} = 4^0$
    $2x - 1 = 0$
    $2x = 1$
    $\boxed{x = \frac{1}{2}}$

14. $5^{\log_5 16} = 2^x$
    $16 = 2^x$
    $2^4 = 2^x$
    $\boxed{x=4}$

15. $\ln(3x+6) = \ln 2x$
    $3x + 6 = 2x$
    $x = 6$

16. $\log_2 5x = \log_2\left(\frac{1}{3}\right)$
    $5x = \frac{1}{3}$
    $x = \frac{1}{15}$

17. $\log_9 27 = x$
    $9^x = 27$
    $3^{2x} = 3^3$
    $2x = 3$
    $x = 3/2$

18. $\log 3x = \log 12$
    $3x = 12$
    $x = 4$

19. Find the inverse of $y = 3^x$.
    $x = 3^y$
    $\log_3 x = y$
    $f^{-1}(x) = \log_3 x$

20. Use $f(x) = \log_2(x+8)$ to find the following without using a calculator, then sketch the graph.

domain: $(-8, \infty)$

range: $(-\infty, \infty)$

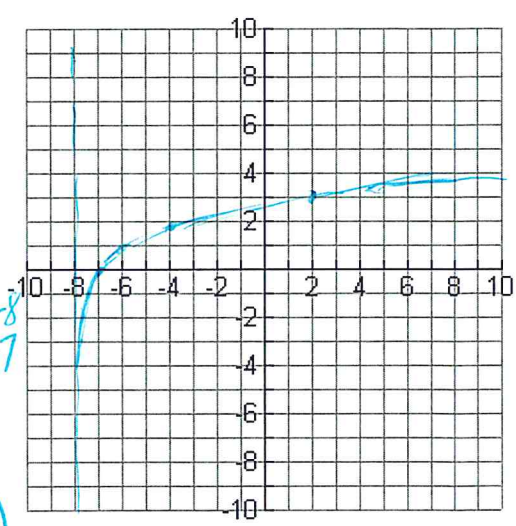
equation of the asymptote: $x = -8$

x-intercept $(-7, 0)$

$0 = \log_2(x+8)$
$\cancel{x+8=0}$
$2^0 = x+8$
$x = 1-8$
$= -7$

y-intercept $(0, 3)$

$f(x) = \log_2 8$
$3$




Find the coordinates of the point when x = –4.

$\cancel{(2,4)}$ $\log_2(-4+8)$
$\log_2 4$
$2^{2} = 4$
$(-4, 2)$