

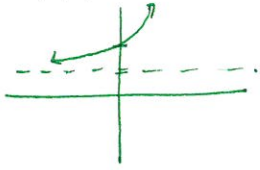
Key

2nd Semester Review – Pre-Calculus

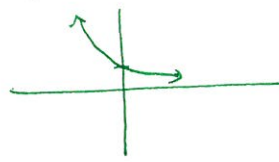
Chapter 3

Graph.

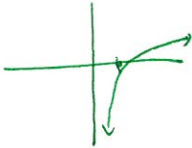
1. $f(x) = e^x + 1$



2. $f(x) = 2^{-x}$



3. $f(x) = \log_4 x$



4. $f(x) = \ln(x-2)$



5. Find the domain of $f(x) = \log_3(x^2 - 9)$.

$(-\infty, -3) \cup (3, \infty)$

6. Evaluate $\log_9 28$ using a calculator.

1.52

7. Condense to one logarithmic expression: $5 \ln x - \frac{1}{2} \ln y + 6 \ln z$

$\ln \frac{x^5 z^6}{y^{1/2}}$

Solve. Give exact answers as well as approximations to three decimal places.

8. $3^{x-1} = \frac{1}{81}$

$x-1 = \log_3 \frac{1}{81}$

$x = -4 + 1$

$x = -3$

9. $x - 4 = \log_2 \frac{1}{64}$

$x - 4 = -6$

$x = -2$

10. $5^x = 41$

$\log_5 41 = x$

2.307

11. $x - x^2 = \log_5 \frac{1}{25}$

$x - x^2 = -2$

$0 = x^2 - x - 2$

$0 = (x-2)(x+1)$

$x = -1, 2$

12. $\log_2 x + \log_2(x-3) = 2$

$\log_2(x^2 - 3x) = 2$

$x^2 - 3x = 4$

$x = 4$

$x^2 - 3x - 4 = 0$

$(x-4)(x+1) = 0$

13. $e^{2x} - 4e^x = 12$

$(e^x - 6)(e^x + 2) = 0$

$\ln 6 = x$ or $\ln(-2) = x$

1.792

14. If \$5000 is invested at 9% interest for 3 years, what is the final amount if it is compounded continuously?

$5000 e^{(0.09)(3)} = \$6549.82$

15. \$6000 is invested at a rate of 13%. Find the time required for the investment to double if the interest is compounded continuously.

$2 = e^{.13t}$
 $\ln 2 = .13t$

$t = 5.33 \text{ years}$