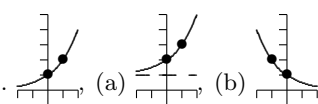
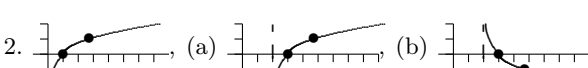


Review 4A

Math 110

The learning center is open for help.

1. Sketch the graph of $y = 2^x$, then use this graph to graph (a) $y = 2^x + 1$ and (b) $y = 2^{-x}$. (Remember to show asymptotes.)
2. Sketch the graph of $y = \ln(x)$, then use this graph to graph (a) $y = \ln(x - 2)$ and (b) $y = -\ln(x - 2)$. (Remember to show asymptotes.)
3. Evaluate each of the following without using a calculator.
 - (a) $\log_4(1)$.
 - (b) $\log_7(49)$
 - (c) $\log_2(\sqrt{2})$
 - (d) $\log(100)$
 - (e) $\ln(e^{2x})$
 - (f) $e^{\ln(3x)}$
 - (g) $10^{\log \sqrt[3]{x}}$
4. Expand (a) $\log\left(\frac{x}{10}\right)$ and (b) $\log_b\left(\frac{x^3y}{z^2}\right)$.
5. Condense (a) $5\ln(x) - 3\ln(y)$ and (b) $\log_3(32) - 2\log_3(2)$.
6. Evaluate to 2 decimal places: (a) $\log_5(100)$ and (b) $\log_3(2)$.
7. Solve $3^x = 100$ and use your calculator to give answer to 2 decimal places.
8. Solve $4e^{2x} = 12$ and use your calculator to give answer to 2 decimal places.
9. Solve $\log_2(3x + 1) = 4$.
10. Solve $\log_2(4x) + \log_2(x - 2) = 5$.
11. Solve the system using substitution $\begin{cases} x+2y=7 \\ 3x-5y=-12 \end{cases}$.
12. Solve the system using elimination $\begin{cases} 2x^2+3y^2=2 \\ 4x^2-y^2=4 \end{cases}$.
13. Solve the system using elimination $\begin{cases} x-y+2z=-1 \\ 2x+y+z=7 \\ x+2y+4z=3 \end{cases}$.

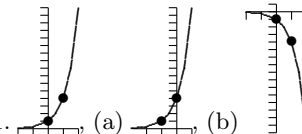
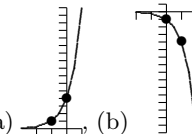
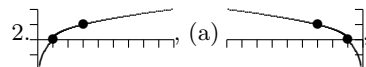
Answers to problems above: 1.  2.  3. (a) 0, (b) 2, (c) $\frac{1}{2}$, (d) 2, (e) $2x$, (f) $3x$, (g) $\sqrt[3]{x}$ 4. (a) $\log(x) - 1$, (b) $3\log_b(x) + \log_b(y) - 2\log_b(z)$ 5. (a) $\ln\left(\frac{x^5}{y^3}\right)$, (b) $\log_3(8)$ 6. (a) 2.86, (b) 0.63 7. $x = \ln(100)/\ln(3) \approx 4.19$ 8. $x = \ln(3)/2 \approx 0.55$ 9. $x = 5$ 10. $x = 4$ 11. $x = 1, y = 3$ 12. $(1, 0), (-1, 0)$ 13. $x = 3, y = 2, z = -1$

Review 4B

Math 110

The learning center is open for help.

1. Sketch the graph of $y = 4^x$, then use this graph to graph (a) $y = 4^{x+1}$ and (b) $y = -4^x$. (Remember to show asymptotes.)
2. Sketch the graph of $y = \log_3(x)$, then use this graph to graph (a) $y = \log_3(-x)$ and (b) $y = \log_3(-x) + 1$. (Remember to show asymptotes.)
3. Evaluate each of the following without using a calculator.
 - (a) $\log_3(3)$.
 - (b) $\log_2(8)$
 - (c) $\log_4(2)$
 - (d) $\log(\frac{1}{10})$
 - (e) $\ln(e^x)$
 - (f) $e^{\ln(x+1)}$
 - (g) $10^{\log(x^2)}$
4. Expand (a) $\ln(xe^x)$ and (b) $\log\left(\frac{x}{y^2z^3}\right)$.
5. Condense (a) $4\ln(x) + \ln(y)$ and (b) $\log_2(3x) - 2\log_2(3)$.
6. Evaluate to 2 decimal places: (a) $\log_2(5)$ and (b) $\log_9(27)$.
7. Solve $2^x = 5$ and use your calculator to give answer to 2 decimal places.
8. Solve $2e^{x+1} = 6$ and use your calculator to give answer to 2 decimal places.
9. Solve $\log_3(2x - 1) = 2$.
10. Solve $\log_3(4x - 5) - \log_3(x + 1) = 1$.
11. Solve the system using substitution $\begin{cases} 3x^2 + y^2 = 4 \\ x + y = 2 \end{cases}$.
12. Solve the system using elimination $\begin{cases} x - 3y = 0 \\ 2x + 4y = 10 \end{cases}$.
13. Solve the system using elimination $\begin{cases} x + y + 3z = -2 \\ 2x + y + z = 1 \\ 2x + y + 2z = 0 \end{cases}$.

Answers to problems above: 1.  (a)  2.  3. (a) 1, (b) 3, (c) $\frac{1}{2}$, (d) -1, (e) x , (f) $x + 1$, (g) x^2 4. (a) $\ln(x) + x$, (b) $\log(x) - 2\log(y) - 3\log(z)$ 5. (a) $\ln(x^4y)$, (b) $\log_2(\frac{x}{3})$ 6. (a) 2.32, (b) 1.50 7. $x = \ln(5)/\ln(2) \approx 2.32$ 8. $x = \ln(3) - 1 \approx 0.10$ 9. $x = 5$ 10. $x = 8$ 11. (0, 2), (1, 1) 12. $x = 3, y = 1$ 13. $x = 1, y = 0, z = -1$