AMAT. 100: Precalculus — Exam 2 Practice Problems

1. Given that 1 is a root of $x^3 - 2x^2 - 5x + 6$, factor this polynomial completely.
2. Find the quotient and remainder of $3x^5 + 4x^3 - 5x^2 + 3x + 2$ divided by $x^2 + 2x + 1$.
3. Use the laws of logarithms to rewrite the following expressions as a single logarithm:

   $\log(x) - 7\log(y) + 5\log(z)$ $\qquad$ $\ln(x+2) + 2\ln(x)$

   $\log_3(1) + 3\log_3(y)$

4. Expand and simplify the following logarithmic expressions as much as possible:

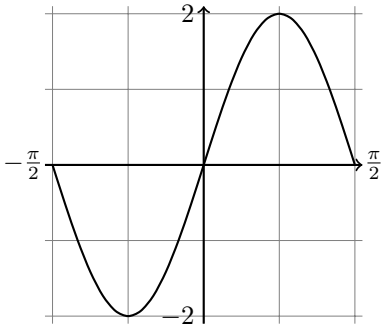
   $\log(x^2 - 5x + 6)$ $\qquad$ $\log_2(4x^3)$ $\qquad$ $\ln(xe^{2x})$

5. Solve for x: $2e^{2x} + 9e^x - 5 = 0$
6. Find the domain of the function $f(x) = \log(3x - 2) + 4$
7. An initial ammount of \$1200 is invested into a savings account at a 1.2% annual interest rate, compounded monthly. Write an expression for how much money will be in the account after 2 years.
8. Evaluate the following trigonometric functions:

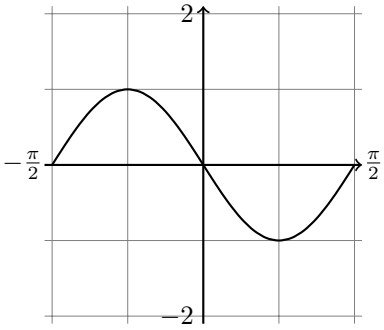
   $\sin\left(\frac{2\pi}{3}\right)$ $\qquad$ $\tan\left(-\frac{5\pi}{6}\right)$ $\qquad$ $\csc\left(\frac{7\pi}{2}\right)$

9. Plot the graph of the function $f(x) = \frac{1}{2}\cos(3x - \pi)$
10. Which of the following is the graph of $y = 2\sin(2x + \pi)$?

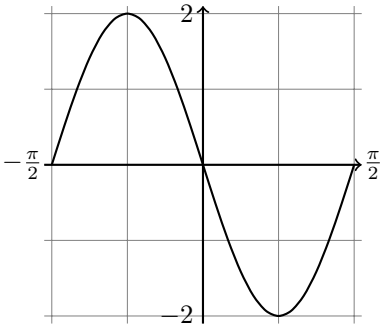
(a)



(b)



(c)



(d)