1. Write down the equations of lines with the given description.
   (a) A line which passes through the points (1, 2) and (-2, 3).
   (b) A line with slope 3 and passing through the point (2, 2).
   (c) A line which passes through the origin and parallel to the line 3x + 5y = 3.

2. Let $y = f(x)$ be the graph given below.

   (a) What is the domain of $f$?
   (b) How many relative minima does $f$ have? Write the $x$ and $y$ values of the relative minima.

3. Use your calculator to find the only positive root of this equation:
   $$x^3 + x^2 - 4x - 2 = 0$$

4. Solve the following equations using the quadratic formula:
   (a) $$\frac{3}{2}x^2 + \frac{1}{2}x - 1 = 0$$
   (b) $$\sqrt{x + 25} - 2x + 16 = 0$$

5. Let $f(x) = \sqrt{x + 2} - 5$.
   (a) Explain how you get this graph from the graph of $g(x) = \sqrt{x}$.
   (b) Find the domain of $f(x)$.

6. Solve the following inequality and write the solution in interval notation (this means round parenthesis and/or square brackets). Also, sketch your answer on the real line.
   $$|\frac{3}{2}x - 1| < 4$$

7. Complete the square to find the vertex of the following parabola. Find the $x$–intercepts as well. Sketch the graph.
   $$f(x) = x^2 - 6x + 8$$

8. Simplify the following expression
   $$\frac{(8x^3)^{−2/3} y^3}{32(x\sqrt{y})^3}$$

9. Given the graph of $f(x) = 3^{-x}$, describe how to get the graph of $g(x) = 3^{-(x-2)} - 1$. Sketch both graphs on the same set of axes.
10. Evaluate
\[
\log_2 \frac{1}{64}, \quad \ln e^{-0.2}, \quad \log_3 20
\]

11. Use the properties of the logarithm to write the following expression as a sum, difference, and/or constant multiple of logarithm.
\[
\log_2 \frac{8x^4(y-5)^2}{z^3}, \quad \log \sqrt[3]{\frac{z^4y^5}{100a^3}}
\]

12. Solve the following equations
\[
\log(x + 21) + \log x = 2, \quad e^{2x - 3} = 5
\]

13. Alan has $1000 today deposited in a bank where the interest rate is 5% per year compounded continuously. How much will he have 3 years from now? How much if the interest is compounded monthly? How long must he wait to have $2000 in his account if the interest is compounded continuously?

14. Given \(\sin(\alpha) = -3/5\) with \(\frac{3\pi}{2} < \alpha < 2\pi\), find the exact values of \(\cos(\alpha)\) and \(\tan(\alpha)\). Draw a picture that explains your work.

15. (a) Determine the reference angle for \(\theta = 225^\circ\), and plot \(\theta\) on the unit circle.
   (b) Find the exact values of \(\sin(225^\circ)\), of \(\cos(225^\circ)\), and of \(\tan(225^\circ)\).
   (c) Convert \(225^\circ\) to radians.

16. At a distance of 135 ft on the ground, a light source shines onto a cloud. The angle between the ground and the light spot is measured to be 67.35°. How high is the cloud in the air?

17. Sketch one period of the graph \(y = 2\sin(2x) - 1\). Label the highest and the lowest point of your graph. Find the amplitude and the period.

18. Simplify
\[
(1 - \sin \theta)(1 + \sin \theta) - \cos^2 \theta = ?
\]