1. (1 pt) Evaluate the following expression without using a calculator. Simplify your answer as much as possible, and enter your answer as a fraction.

\[
\left( \frac{8}{27} \right)^{-1/3} = 
\]

2. (1 pt) Simplify the following expression as much as possible. Assume that all variables are positive.

\[
\sqrt[4]{36x^5} \sqrt[4]{36x^3} = 
\]

3. (1 pt) The expression \( \left( \frac{x^5 y^2}{y^4} \right)^{2/3} \) equals \( x^r y^t \) where

r, the exponent of x, is: 

\( r = \) 

t, the exponent of y, is: 

\( t = \)

4. (1 pt) Change the radical \( \sqrt[5]{\frac{5}{8}} \) into simplest radical form \( a \sqrt[5]{b} \), where A, B, and C are all integers.

Answer: A = , B = , and C = 

5. (1 pt) Find the product

\( (2\sqrt{5} - 6\sqrt{y}) (2\sqrt{5} + 6\sqrt{y}) \)

and express your answer in simplest radical form.

Answer: 

6. (1 pt) The solution of the equation \( \sqrt{2x+1} = \sqrt{2x-1} + 1 \) is \( x = \)

7. (1 pt) The solution of the equation

\( (2x-1)^{3/2} - 3 = 0 \)

is \( x = \). Hint: You need to take something to the power 3.

\[
\log_5(5x + 1) = 3.
\]

Answer: \( x = \)

8. (1 pt) Find all of the zeros of the function \( f(x) = (x^2 + 2x - 9) (x^3 - 3x^2 - 40x) \). If there is more than one answer, enter your answers as a comma separated list. If there are no zeros, enter NONE. Enter exact answers, not decimal approximations.

\[
x = 
\]

9. (1 pt) Find the zeros of the function \( y = x^4 - 3x^2 - 10 \). If there is more than one answer, enter your answers as a comma separated list. If there are no real zeros, enter NONE. Enter exact answers, not decimal approximations.

\[
x = 
\]

10. (1 pt) Find a possible formula for a polynomial \( f \) that has degree 2 or less, \( f(-2) = f(5) = 0 \) and \( f(2) = 24 \).

\( f(x) = \)

11. (1 pt)

\[
\log_2(16) = 
\]

\[
\log_2 \left( \frac{1}{32} \right) = 
\]

12. (1 pt)

\[
\log_{10}(100) = 
\]

\[
\log_{10} \left( \frac{1}{1000} \right) = 
\]

13. (1 pt)

\[
\log_9(27) = 
\]

\[
\log_9 \left( \frac{1}{27} \right) = 
\]

14. (1 pt)

Solve the following equation for \( x \).

\[
\log_5(5x + 1) = 3.
\]

Answer: \( x = \)

15. (1 pt)

Use a calculator or computer to solve the following equation for \( x \).

\[10^{4x} = 14.\]

Answer: \( x = \)