Exponentials

Problem. Condense The Following Expression Into A Single Exponential.

\[
\begin{align*}
\text{Hint: } & \quad 2^3 = 8, 2^4 = 16, 2^7 = 128 \\
\text{Hint: } & \quad 3^2 = 9, 3^3 = 27, 3^5 = 243 \\
\text{Hint: } & \quad 5^2 = 25, 5^3 = 125, 5^5 = 3125
\end{align*}
\]

\[
\begin{align*}
\left(\frac{7}{x^2 y^2 z^2}\right)^2 & = 7 \\
\left(\frac{2^3 x^2 y^2 z^2}{2^1 x^2 y^2 z^2}\right)^2 & = 2 \\
\left(\frac{y^3 x^2 y^2 z^2}{2^2 y^2 y^2 z^2}\right)^2 & = 2 \\
\left(\frac{216 x^3 y^3 x^3 y^3}{260 x^3 y^3 x^3 y^3}\right)^2 & = 6 \\
\left(\frac{56 x^4 y^4 x^4 y^4}{36 x^4 y^4 x^4 y^4}\right)^2 & = 6 \\
\left(\frac{2744 x^2 y^2 z^2}{14 x^2 y^2 z^2}\right)^2 & = 14
\end{align*}
\]

(Hint: \(6^2 = 36, 6^3 = 6, 6^4 = 216\))

(Hint: \(6^2 = 36, 6^3 = 6, 6^4 = 36\))

(Hint: \(14^3 = 2744, 14^2 = 196, 14^2 = 196\))

Problem. Expand The Following Exponential So That Each Exponent Has At Most One Term.

\[
\begin{align*}
\frac{3}{x^5 y^3 z^1} & = \frac{1}{2} \\
\frac{5}{x^2 y^2 z^3} & = \frac{1}{2} \\
\frac{3}{x^3 y^2 z^2} & = \frac{1}{2} \\
\frac{5}{x^2 y^2 z^2} & = \frac{1}{2}
\end{align*}
\]

\[
\begin{align*}
\left(\frac{3}{x^5 y^3 z^1}\right)^2 & = 9 \\
\left(\frac{5}{x^2 y^2 z^3}\right)^2 & = 25 \\
\left(\frac{3}{x^3 y^2 z^2}\right)^2 & = 9 \\
\left(\frac{5}{x^2 y^2 z^2}\right)^2 & = 25
\end{align*}
\]

\[
\begin{align*}
\left(\frac{3}{x^5 y^3 z^1}\right)^2 & = \frac{9}{x^{10} y^6 z^2} \\
\left(\frac{5}{x^2 y^2 z^3}\right)^2 & = \frac{25}{x^4 y^4 z^6} \\
\left(\frac{3}{x^3 y^2 z^2}\right)^2 & = \frac{9}{x^6 y^4 z^4} \\
\left(\frac{5}{x^2 y^2 z^2}\right)^2 & = \frac{25}{x^4 y^4 z^4}
\end{align*}
\]
Problem. Condense The Following Expression Into A Single Exponential.

- $11 \cdot 11^\frac{3}{2} \cdot 11^{-\frac{3}{4}} \cdot 11^\frac{1}{4} = 11$
- $\frac{1}{3} \cdot 3^\frac{1}{3} \cdot 3^\frac{1}{3} \cdot 3^\frac{1}{3} = 3$
- $\frac{1}{13} \cdot 13^\frac{1}{3} \cdot 13^\frac{1}{3} \cdot 13^\frac{1}{3} = 13$
- $\frac{1}{5} \cdot 5^\frac{3}{2} \cdot 5^\frac{1}{2} \cdot 5^\frac{1}{2} = 5$
  (Hint: $5^1 = 5, 5^1 = 5, 5^1 = 5$)
- $\frac{1}{27} \cdot 27^\frac{1}{3} \cdot 27^\frac{1}{3} \cdot 27^\frac{1}{3} = 3$
  (Hint: $3^1 = 3, 3^2 = 9, 3^3 = 27$)
- $\frac{1}{z} \cdot \frac{1}{z} \cdot \frac{1}{z} \cdot \frac{1}{z} = z^{-4}$
  (Hint: $3^1 = 27, 3^2 = 9, 3^3 = 9$)

Problem. Expand The Following Exponential So That Each Exponent Has At Most One Term.

- $2 \cdot \frac{1}{x} \cdot \frac{1}{x} \cdot \frac{1}{x} = \frac{1}{x^3}$
- $\frac{1}{5} \cdot \frac{1}{x} \cdot \frac{1}{x} \cdot \frac{1}{x} = \frac{1}{5x^3}$
- $\frac{4}{5} \cdot \frac{1}{y} \cdot \frac{1}{y} \cdot \frac{1}{y} = \frac{4}{5y^3}$
- $2 \cdot \frac{1}{z} \cdot \frac{1}{z} \cdot \frac{1}{z} = \frac{1}{z^3}$
Logarithms

Problem. Fully Expand The Following Logarithmic Expression. (Hint: Don’t Factor Out Common factors from the linear terms, Xronos isn’t that smart ... yet.)

\[
\log_3 \left( \frac{(11x+4)(-7y+4)^2(-11z+5)^3}{(15x-4)^3(12y+10)^5(-8z-2)^6} \right)
\]

\[
= \log_3 \left( \frac{?}{?} \right) + 2 \log_3 \left( \frac{?}{?} \right) + 3 \log_3 \left( \frac{?}{?} \right)
\]

\[
-4 \log_3 \left( \frac{?}{?} \right) - 5 \log_3 \left( \frac{?}{?} \right) - 6 \log_3 \left( \frac{?}{?} \right)
\]

Problem. Fully Expand The Following Logarithmic Expression. (Hint: Don’t Factor Out Common factors from the linear terms, Xronos isn’t that smart ... yet.)

\[
\log_{13} \left( \frac{(4x+1)(2y-6)^2(2z-9)^4}{(x+13)^4(2y-4)^5(9z-6)^6} \right)
\]

\[
= \log_{13} \left( \frac{?}{?} \right) + 2 \log_{13} \left( \frac{?}{?} \right) + 3 \log_{13} \left( \frac{?}{?} \right)
\]

\[
-4 \log_{13} \left( \frac{?}{?} \right) - 5 \log_{13} \left( \frac{?}{?} \right) - 6 \log_{13} \left( \frac{?}{?} \right)
\]
Problem. Fully Expand The Following Logarithmic Expression. (Hint: Don’t Factor Out Common factors from the linear terms, Xronos isn’t that smart ... yet.)

\[ \log_{15} \left( \frac{(12x - 5)(8y - 1)^2(6x - 5)^3}{(-5x + 15)^4(3y + 5)^5(-2z + 1)^6} \right) \]

\[ = \log_{15} \left( \square \right) + 2 \log_{15} \left( \square \right) + 3 \log_{15} \left( \square \right) \]

\[ -4 \log_{15} \left( \square \right) - 5 \log_{15} \left( \square \right) + \log_{15} (-2z + 1) \]

Problem. Fully Expand The Following Logarithmic Expression. (Hint: Don’t Factor Out Common factors from the linear terms, Xronos isn’t that smart ... yet.)

\[ \log_{15} \left( \frac{(6x + 14)(-15y + 10)^2(-2z + 3)^3}{(-13x - 11)^4(-14y + 15)^5(-6z - 15)^6} \right) \]

\[ = \log_{15} \left( \square \right) + 2 \log_{15} \left( \square \right) + 3 \log_{15} \left( \square \right) \]

\[ -4 \log_{15} \left( \square \right) + \log_{15} (-14y + 15) - 6 \log_{15} \left( \square \right) \]

Problem. Fully Condense The Following Logarithmic Expression Until There Is Only One Logarithmic function remaining, with no coefficient. (Note: Formatting may look a little odd in order to get it to fit on a page correctly without getting crazy scroll bars everywhere)

\[ (-4) \log_{13} (-10x + 2) \]

\[ + (7) \log_{13} (-9y + 7) \]

\[ + (9) \log_{13} (-4x + 3) \]

\[ + (-1) \log_{13} (-7z - 1) \]

\[ \log_{13} \left( \square \right) \]

Problem. Fully Condense The Following Logarithmic Expression Until There Is Only One Logarithmic function remaining, with no coefficient. (Note: Formatting may look a little odd in order to get it to fit on a page correctly without getting crazy scroll bars everywhere)

\[ (8) \log_{15} (2x - 3) \]

\[ + (-5) \log_{15} (-15y - 2) \]

\[ + (-2) \log_{15} (-14x - 12) \]

\[ + (5) \log_{15} (-13z + 4) \]

\[ \log_{15} \left( \square \right) \]
Problem. Fully Condense the Following Logarithmic Expression Until There Is Only One Logarithmic function remaining, with no coefficient. (Note: Formatting may look a little odd in order to get it to fit on a page correctly without getting crazy scroll bars everywhere)

\[\begin{align*}
&(−6) \log_{12} (8x−14) \quad + (10) \log_{12} (2y+10) \quad + (−2) \log_{12} (−14z+5) \\
&\quad + (−10) \log_{12} (−6x−7) \quad + (3) \log_{12} (−3y−2) \\
&\quad + (−9) \log_{12} (−14z+13)
\end{align*}\]

\[\log_{12} \left( \square \right)
\]

Problem. Fully Condense the Following Logarithmic Expression Until There Is Only One Logarithmic function remaining, with no coefficient. (Note: Formatting may look a little odd in order to get it to fit on a page correctly without getting crazy scroll bars everywhere)

\[\begin{align*}
&(7) \log_{15} (14x−11) \quad + (−4) \log_{15} (−3y−8) \quad + (3) \log_{15} (−8z+4) \\
&\quad + (8) \log_{15} (−12x+15) \quad + (−1) \log_{15} (−15y+10) \\
&\quad + (2) \log_{15} (5z+2)
\end{align*}\]

\[\log_{15} \left( \square \right)
\]
Problem. Simplify the following numeric radicals:

- \( \sqrt[4]{60000} = ? \sqrt{6} \)
- \( \sqrt[4]{648} = ? \sqrt{3} \)
- \( \sqrt[4]{11250} = ? \sqrt{18} \)
- \( \sqrt[4]{240} = ? \sqrt{15} \)

Problem. Simplify the following radical. Make sure there are no fractions in the resulting radicand, and all exponents are positive:

- \( \sqrt[3]{x^7y^6z^{13}} = ? x^{?}y^{?}z^{?} \)
- \( \sqrt[2]{x^{11}y^{14}z^{11}} = ? x^{?}y^{?}z^{?} \)
- \( \sqrt[2]{\frac{1}{x^{12}y^7z^{12}}} = ? x^{?}y^{?}z^{?} \)
- \( \sqrt[3]{\frac{x^5}{x^3y^8}} = ? x^{?}y^{?}z^{?} \)
Polynomial Factoring

Problem. Fully Factor The Following Polynomial (Hint: You Likely Need To Use Rational Root Theorem to find at least one factor)

\[ p(x) = x^4 + 11x^3 + 38x^2 + 40x \]

The smallest (most negative) zero is: 

The largest (most positive) zero is: 

The sum of the zeros of \( p(x) \) is: 

Problem. Fully Factor The Following Polynomial (Hint: You Likely Need To Use Rational Root Theorem to find at least one factor)

\[ p(x) = x^4 + 2x^3 - 13x^2 - 14x + 24 \]

The smallest (most negative) zero is: 

The largest (most positive) zero is: 

The sum of the zeros of \( p(x) \) is: 
Problem. Fully Factor The Following Polynomial (Hint: You Likely Need To Use Rational Root Theorem to find at least one factor)

\[ p(x) = x^4 + 2x^3 - 25x^2 - 26x + 120 \]

The smallest (most negative) zero is: 

The largest (most positive) zero is: 

The sum of the zeros of \( p(x) \) is: 

Problem. Fully Factor The Following Polynomial Using Real Coefficients.

\[ p(x) = 10x^6 - 26x^5 + 42x^4 - 78x^3 + 56x^2 - 52x + 24 \]

How many real-valued zeros does \( p(x) \) have? 

What is the sum of the real-valued zeros? 

How many non-real-valued zeros does \( p(x) \) have? 

Problem. Fully Factor The Following Polynomial Using Real Coefficients.

\[ p(x) = -25x^6 + 15x^5 - 202x^4 + 120x^3 - 391x^2 + 225x - 30 \]

How many real-valued zeros does \( p(x) \) have? 

What is the sum of the real-valued zeros? 

How many non-real-valued zeros does \( p(x) \) have?
Problem. Fully Factor The Following Polynomial Using Real Coefficients.

\[ p(x) = 4x^6 - 14x^5 + 32x^4 - 70x^3 + 84x^2 - 84x + 72 \]

How many real-valued zeros does \( p(x) \) have? [ ]

What is the sum of the real-valued zeros? [ ]

How many non-real-valued zeros does \( p(x) \) have? [ ]
Problem. Perform the following division:

\[ p(x) = -40x^6 - 46x^5 - 15x^4 - 49x^3 - 6x^2 + 34x + 5 \]

\[ -4x^2 - 5x \]

The result of the division is: (The Polynomial Result): \[ ? \] with remainder: \[ ? \]

Thus we may write the original polynomial as:

\[ p(x) = ? + \frac{?}{-4x^2 - 5x} \]

Problem. Perform the following division:

\[ p(x) = \frac{-18x^6 + 54x^5 + 79x^4 - 67x^3 - 14x^2 + x + 7}{2x^2 - 8x + 1} \]

The result of the division is: (The Polynomial Result): \[ ? \] with remainder: \[ ? \]

Thus we may write the original polynomial as:

\[ p(x) = ? + \frac{?}{2x^2 - 8x + 1} \]
Problem. Perform The Following Division:

\[ p(x) = -10x^6 + 16x^4 + 35x^3 + 58x^2 + 8x + 20 \]

\[ -5x^2 - 2 \]

The Result of the division is: (The Polynomial Result): \[ ? \] with Remainder: \[ ? \]

Thus we may write the original polynomial as:

\[ p(x) = \boxed{?} + \boxed{?} \]

Problem. Perform The Following Division Using Synthetic Division:

\[ p(x) = -56x^5 + 118x^4 - 18x^3 - 22x^2 + 37x - 52 \]

\[ -7x + 6 \]

The Result of the division is: (The Polynomial Result): \[ ? \] with Remainder: \[ ? \]

Thus we may write the original polynomial as:

\[ p(x) = \boxed{?} + \boxed{?} \]
Problem. Perform the following division using **synthetic division**

\[ p(x) = \frac{-49x^5 + 21x^4 - 45x^3 + 35x^2 + 62x + 13}{-7x - 1} \]

The result of the division is: (The polynomial result): \( \) with remainder: \( \)

Thus we may write the original polynomial as:

\[ p(x) = \] \( \) + \( \) \( \)

Problem. Perform the following division using **synthetic division**

\[ p(x) = \frac{40x^5 + 18x^4 - 88x^3 - 76x^2 + 4x + 22}{-8x - 10} \]

The result of the division is: (The polynomial result): \( \) with remainder: \( \)

Thus we may write the original polynomial as:

\[ p(x) = \] \( \) + \( \) \( \)
**Problem. Factor The Following Quadratic Using The ‘Factoring Coefficients Method’.

\[ p(x) = x^2 + 7x - 8 \]

What are the factors of \( p(x) \)? (put them in order of smallest to largest coefficient)

\[ p(x) = (x+ ?)(x+ ?) \]

What are the zeros of \( p(x) \)? (List from (smallest / most negative) to (largest / most positive))

\[ ?, ? \]

What are the \( x \)-intercepts of \( p(x) \)? (List from left to right)

\[ ?, ? \]

What is the \( y \)-intercept of \( p(x) \)?

\[ ?, ? \]
Problem. Factor The Following Quadratic Using The ‘Factoring Coefficients Method’.

\[ p(x) = x^2 + 10x + 24 \]

What are the factors of \( p(x) \)? (put them in order of smallest to largest coefficient)

\[ p(x) = (x+\underline{?})(x+\underline{?}) \]

What are the zeros of \( p(x) \)? (List from (smallest / most negative) to (largest / most positive))

\[ \underline{?}, \underline{?} \]

What are the \( x \)-intercepts of \( p(x) \)? (List from left to right)

\[ \underline{?}, \underline{?} \]

\[ \underline{?}, \underline{?} \]

What is the \( y \)-intercept of \( p(x) \)?

\[ \underline{?}, \underline{?} \]

---

Problem. Factor The Following Quadratic Using The ‘Factoring Coefficients Method’.

\[ p(x) = x^2 + x - 2 \]

What are the factors of \( p(x) \)? (put them in order of smallest to largest coefficient)

\[ p(x) = (x+\underline{?})(x+\underline{?}) \]

What are the zeros of \( p(x) \)? (List from (smallest / most negative) to (largest / most positive))

\[ \underline{?}, \underline{?} \]
What are the *x*-intercepts of $p(x)$ (List from left to right) $(\text{?}, \text{?})$, $(\text{?}, \text{?})$

What is the *y*-intercept of $p(x)$? (List from left to right) $(\text{?}, \text{?})$

**Problem. Factor The Following Quadratic (Hint: The AC Method Is Appropriate Here)**

$$p(x) = 15 x^2 - 41 x + 28$$

Write the factored form of $p(x)$: (Put them in order of smallest to largest coefficient of $x$)

$$p(x) = (\text{?})(\text{?})$$

What are the *zeros* of $p(x)$? (List from (smallest / most negative) to (largest / most positive)) $(\text{?}, \text{?})$

What are the *x*-intercepts of $p(x)$ (List from left to right) $(\text{?}, \text{?})$, $(\text{?}, \text{?})$

What is the *y*-intercept of $p(x)$? (List from left to right) $(\text{?}, \text{?})$

**Problem. Factor The Following Quadratic (Hint: The AC Method Is Appropriate Here)**

$$p(x) = 8 x^2 + 22 x + 5$$

Write the factored form of $p(x)$: (Put them in order of smallest to largest coefficient of $x$)

$$p(x) = (\text{?})(\text{?})$$
What are the zeros of \( p(x) \)? (List from smallest / most negative to largest / most positive) 

\[ ?, ? \]

What are the \( x \)-intercepts of \( p(x) \) (List from left to right) 

\[ ?, ?, ? \]

What is the \( y \)-intercept of \( p(x) \)? 

\[ ?, ?, ? \]

**Problem. Factor The Following Quadratic (Hint: The AC Method Is Appropriate Here)**

\[ p(x) = -5x^2 - 12x - 4 \]

Write the factored form of \( p(x) \): (Put them in order of smallest to largest coefficient of \( x \))

\[ p(x) = (?, ?)(?, ?) \]

What are the zeros of \( p(x) \)? (List from smallest / most negative to largest / most positive) 

\[ ?, ? \]

What are the \( x \)-intercepts of \( p(x) \) (List from left to right) 

\[ ?, ?, ? \]

What is the \( y \)-intercept of \( p(x) \)? 

\[ ?, ?, ? \]
Rigid Translation Practice

Problem. Consider the rigid translation of $f(x)$ described by $f(x + 6) + 3$.
We could describe this translation geometrically by saying that the graph of $f(x)$ was moved

? unit(s) to the — ? and ? unit(s) — ?

Problem. Consider the rigid translation of $f(x)$ described by $f(x - 6) - 5$.
We could describe this translation geometrically by saying that the graph of $f(x)$ was moved

? unit(s) to the — ? and ? unit(s) — ?

Problem. Consider the rigid translation of $f(x)$ described by $f(x - 9) + 5$.
We could describe this translation geometrically by saying that the graph of $f(x)$ was moved

? unit(s) to the — ? and ? unit(s) — ?

Transformation Practice

Problem. Consider the transformation of $f(x)$ described by $-8f(-\frac{1}{3}x)$.
This transformation could be described geometrically as stretching/compressing the graph horizontally to ? times its original width and it — ? flipped over the y-axis.
It is also stretched/compressed vertically to ? times its original height and it — ? flipped over the x-axis.

Problem. Consider the transformation of $f(x)$ described by $\frac{2}{3}f(\frac{3}{2}x)$.
This transformation could be described geometrically as stretching/compressing the graph horizontally to times its original width and it flipped over the y-axis. It is also stretched/compressed vertically to times its original height and it flipped over the x-axis.
Problem. Consider the transformation of \( f(x) \) described by \(-\frac{3}{8} f \left( -\frac{1}{4} x \right)\).

This transformation could be described geometrically as stretching/compressing the graph horizontally to \( ? \) times its original width and it \( ? \) flipped over the \( y \)-axis.

It is also stretched/compressed vertically to \( ? \) times its original height and it \( ? \) flipped over the \( x \)-axis.

Combinations of Translations and Transformation Practice

Problem. Consider the function manipulation of \( f(x) \) described by:

\[
\frac{5}{4} f \left( \frac{8}{5} x - 10 \right) + 8
\]

This can be described geometrically as:

First:

- Move 10 units \texttt{right}
- Move 10 units \texttt{left}
- Stretch/Compress horizontally to \( \frac{5}{8} \) times its original width and it \texttt{is not} flipped over the \( y \)-axis.
- Stretch/Compress horizontally to \( \frac{5}{8} \) times its original width and it \texttt{is} flipped over the \( y \)-axis.
- Stretch/Compress horizontally to \( \frac{3}{8} \) times its original width and it \texttt{is not} flipped over the \( y \)-axis.
- Stretch/Compress horizontally to \( \frac{3}{8} \) times its original width and it \texttt{is} flipped over the \( y \)-axis.

\( ? \) Check work
Problem. Consider the function manipulation of $f(x)$ described by:

$$-4f\left(\frac{8}{7}x-1\right) + 7$$

This can be described geometrically as:

First:

<table>
<thead>
<tr>
<th>Move 1 units \texttt{right}</th>
</tr>
</thead>
<tbody>
<tr>
<td>Move 1 units \texttt{left}</td>
</tr>
<tr>
<td>Stretch/Compress horizontally to $\frac{8}{7}$ times its original width and it \texttt{is not} flipped over the y axis.</td>
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<td>Stretch/Compress horizontally to $\frac{8}{7}$ times its original width and it \texttt{is} flipped over the y axis.</td>
</tr>
<tr>
<td>Stretch/Compress horizontally to $\frac{7}{8}$ times its original width and it \texttt{is not} flipped over the y axis.</td>
</tr>
<tr>
<td>Stretch/Compress horizontally to $\frac{7}{8}$ times its original width and it \texttt{is} flipped over the y axis.</td>
</tr>
</tbody>
</table>
Algebra of Functions Practice

Problem. Consider the following functions:

\[ f(x) = 5 \cdot 2^x + 3, \quad g(x) = 4x^2 - 8, \quad h(x) = -10x^3 + 7 \]

Compute the following (Remember, you don't need to simplify!):

- \( (f \circ g)(x) = \) 
- \( (g \circ f)(x) = \) 
- \( 7(f \circ h)(3x) = \) 
- \( -9f(x) + -8g(x) + h(-7x) = \)

Problem. Consider the following functions:

\[ f(x) = -3x^3 - 10, \quad g(x) = -4 \cdot 2^x - 5, \quad h(x) = 2^x - 2 \]

Compute the following (Remember, you don't need to simplify!):

- \( (f \circ g)(x) = \) 
- \( (g \circ f)(x) = \) 
- \( 6(f \circ h)(-6x) = \) 
- \( 5f(x) + -2g(x) + h(-6x) = \)
**Problem. Consider The Following Functions:**

\[ f(x) = -x + 8, \quad g(x) = -2 \cdot 2^x + 8, \quad h(x) = -5 \sqrt{x} - 5 \]

Compute the following (Remember, you don't need to simplify!):

- \((f \circ g)(x) = \) ?
- \((g \circ f)(x) = \) ?
- \(6(f \circ h)(-7x) = \) ?
- \(-9f(x) - 6g(x) + h(-7x) = \) ?

**Properties of Zero Practice**

**Problem. You Have A Function That Is Defined In Terms Of Three**

other functions; \( f(x), g(x) \) and \( h(x) \). Specifically:

\[ F(x) = f(x) \cdot g(x) \cdot h(x) \]

Suppose you know that \( f(2) = 0, g(-6) = 0 \) and \( h(-8) = 0 \).

- What is the sum of the zeros of \( F(x) \)? ?
- What is the product of the zeros of \( F(x) \)? ?
Problem. You Have A Function That Is Defined In Terms Of Three other functions; \(f(x), g(x)\) and \(h(x)\). Specifically:

\[
F(x) = f(x) \cdot g(x) \cdot h(x)
\]

Suppose you know that \(f(6) = 0\), \(g(8) = 0\) and \(h(-2) = 0\).

- What is the sum of the zeros of \(F(x)\)?
- What is the product of the zeros of \(F(x)\)?

Problem. You Have A Function That Is Defined In Terms Of Three other functions; \(f(x), g(x)\) and \(h(x)\). Specifically:

\[
F(x) = f(x) \cdot g(x) \cdot h(x)
\]

Suppose you know that \(f(10) = 0\), \(g(2) = 0\) and \(h(2) = 0\).

- What is the sum of the zeros of \(F(x)\)?
- What is the product of the zeros of \(F(x)\)?

Problem. Consider The Function \(f(x) = -196 (x - 1)^2 - 5\). What Is The Parent Function Of \(f(x)\)?

Problem. Consider The Functions \(f(x) = \sqrt{x + 8}, g(x) = -10x^3 + 4\) And \(h(x) = x\).

Compute \((f + g)(x)\) =